THE *CRIMINAL CAREER PROFILE:* A MEASURE OF CRIMINAL CAREERS

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ABSTRACT

The term *criminal career* is used to describe the course or progress of criminal activity: its onset, duration, termination, severity, and change in severity. Such a term has important implications, given that significant criminal justice, social, and health policies such as crime control, parole, and correctional treatment and management are predicated on achieving the reduction of criminal careers of serious, repeat offenders. Despite its conceptual simplicity, however, criminal career is often treated as having no depth or scope, for example, merely as the number of crimes or length of prison sentence. These indices often give no or little consideration to criminal career parameters and tend to account for only a small portion of the construct of criminal careers. Ideally, a simple metric to measure the onset, duration, termination, severity, and change in severity of a pattern of criminal activities is needed to facilitate the description and measurement of criminal careers of offenders.

The *Criminal Career Profile* (CCP), which uses commonly available criminological information and requires minimal professional skills to execute, can be considered a simple and precise measure of criminal careers. The CCP is a chronological representation on a Cartesian plane of the time in years an offender has spent in prison (y-axis) plotted against the time in years spent out of prison (x-axis) of all incarcerations and time spent in the community. Given that the CCP is a step function, a regression line can be generated. Serious crimes are generally given longer sentences, and more time in than out of prison would generate a steeper regression line. Shallower regression lines result from less time in than out of prison. As such, the CCP regression line can be considered an indication of the seriousness of offending, and the

slope or angle of the regression line can be considered a quantitative index of criminal career severity. Larger slopes or angles (used in this Program of Research) suggest more serious criminal careers. Conversely, smaller slopes or angles suggest less serous criminal careers. Taken altogether, the CCP can provide a quantitative measure of criminal careers: its onset (age at first conviction, which is plotted as the first point on a CCP graph), duration (total time in and out of prison since onset), severity (CCP slope/angle), change in severity (change in CCP slope/angle), and termination (end point or when the CCP slope or angle becomes smaller and closer to 0).

This Program of Research was done to assess the CCP's validity and utility in measuring offenders' criminal career. More specifically, the investigation focused on the seriousness of criminal careers. A number of criteria were used to validate the CCP angle's ability to measure criminal career severity. In Study 1, psychopaths and violent recidivists showed a significantly larger CCP angle than nonpsychopaths and violent nonrecidivists, respectively. Finer groupings based on risk (high, medium, and low), a number of risk measures (*Psychopathy Checklist – Revised*, *Violence Risk Scale*, and *Violence Risk Scale – Sexual Offender Version*), and different types of offenders (i.e. violent, nonviolent, sexual, Dangerous Offenders) were used in Study 2. Two consistent findings across different groups of offenders in Study 2 were CCP angles significantly varied as a function of risk group and correlated with risk ratings. The pattern of results was that larger CCP angles tended to be associated with worse risk groups. In Study 3, both treated offenders and treatment dropouts showed a reduction in CCP angles from pre- to post-treatment. A nonsignificant interaction of group by treatment, however, suggests that post-treatment changes could not be attributed to treatment. Finally, Study

4 showed that CCP angles change with age. Taken altogether, the results of the four studies provided converging evidence for the validity of the CCP as a measure of criminal careers and the CCP angle as a measure of criminal career severity.

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LIST OF ABBREVIATIONS

AFC	Age at First Conviction
AFNVC	Age at First Non-Violent Conviction
AFSC	Age at First Sexual Conviction
AFVC	Age at First Violent Conviction
CPIC	*Canadian Police Information Centre*
CSC	Correctional Service Canada
CCP	*Criminal Career Profile*
CCC	*Criminal Code of Canada*
DO	Dangerous Offenders
HCR-20	*Historical, Clinical, and Risk Management Factors – 20*
LSI-R	*Level of Service Inventory - Revised*
LCSF	*Lifestyle Criminality Screening Form*
MnSOST-R	*Minnesota Sex Offender Screening Tool – Revised*
MASORR	*Multifactorial Assessment of Sex Offender Risk for Recidivism*
NPB	National Parole Board
OMS	*Offender Management System*
PCL-R	*Psychopathy Checklist - Revised*
RRASOR	*Rapid Risk Assessment of Sexual Offense Recidivism*
RPC	Regional Psychiatric Centre
RCMP	Royal Canadian Mounted Police
SORAG	*Sex Offender Risk Appraisal Guide*
VRAG	*Violence Risk Appraisal Guide*

VRS	*Violence Risk Scale*
VRS: SO	*Violence Risk Scale: Sexual Offender Version*
WED	Warrant Expiry Date

"What is past is prologue."
- William Shakespeare (1610), *The Tempest*

1. INTRODUCTION

The term *criminal career* has been used to describe the start, continuation, and end of criminal activities of repeat offenders (Blumstein, Cohen, Das, & Moitra, 1988; Farrington, 1992). Such a term carries with it important social implications, given that significant social, criminal justice, and health policies, such as crime control, parole, and correctional treatment and management are predicated on achieving the reduction of criminal careers of serious, repeat offenders (Greenberg, 1996).

Despite the conceptual simplicity of criminal careers, major shortcomings about the objective measurement of criminal careers continue to exist (e.g., Blumstein &

Cohen, 1987; Blumstein, Cohen, Roth, & Visher, 1986; Hemphill, Templeman, Wong, & Hare, 1998; Loeber & Stouthamer-Loeber, 1996). A criminal career is often quantified as the number of total crimes, with violent and nonviolent crimes counted together or separately. Alternatively, a criminal career is quantified with regard to the duration of offending. The start, chronology, seriousness, change in the seriousness, and termination of criminal activity, however, are often given no or little consideration, which lead to the conclusion that none of the traditional measures of criminal careers is optimal.

Criminal careers are essentially based on criminal history. The importance of criminal history in the prediction of recidivism is well established (e.g., Blumstein, Farrington, & Moitra, 1985; Farrington & Wikstrom, 1994; Farrington, Lambert, & West, 1998; Firestone et al, 1998; Firestone et al., 1999; Hanson & Bussiere, 1998; Hollin & Palmer, 2003; Prouxl et al., 1997; Rice, Quinsey, & Harris, 1991; Scalora & Garbin, 2003; Weisburd, Chayet, & Warring, 1990). Recidivism is the behavior of a repeat or habitual criminal, a measurement of the rate at which offenders commit crimes after being released from prison.

Major instruments assessing risk of recidivism (e.g., *Static 99*; *Psychopathy Checklist – Revised*; *Level of Service Inventory – Revised*; *Historical, Clinical, and Risk Management Factors – 20*; *Violence Risk Scale*; *Violence Risk Scale - Sexual Offender Version*) all have predictor variables that assess criminal history, often through frequency count or rating scale methods. These methods, however, have the potential to overlook certain important aspects of offending. Ideally, a simple metric to measure the onset, duration, seriousness, change in the seriousness, and termination of a pattern of

criminal activity is needed to facilitate the description and measurement of criminal careers.

1.1 Summary of Objectives of Program of Research

This Program of Research was a construct and criterion validation of the *Criminal Career Profile* (CCP) as a measure of criminal career. Construct validation is the process of evaluating how well an instrument operationally defines the attribute (i.e. construct) it was designed to measure (Cronbach & Meehl, 1955; Reber, 1985), whereas criterion validation is the process of determining the relationship between the instrument being validated and independent criteria or standards against which the instrument can be evaluated (Reber, 1985). The CCP's construct validity was established through the extant literature on criminal careers, whereas the CCP's criterion validity was established using a number of criteria and methodologies. In Study 1, psychopathy (yes/no) and violent recidivism (yes/no) were the criteria used. The extant literature has shown that psychopaths are more criminally versatile and commit more violent crimes and, hence, are predicted to have a worse criminal career than nonpsychopaths. Similarly, violent recidivists tend to have a more violent criminal history and, hence, are predicted to have a more serious criminal career than violent nonrecidivists. In Study 2, finer groupings based on risk groups, as determined by actuarial risk assessment instruments, were the criteria used. The extant literature has also shown that the ranking of the extent and seriousness of criminal history from worst to least is high-, medium-, and low-risk. Therefore, the prediction for the ranking of criminal career severity from

worst to least is high-, medium-, and low-risk. In Study 3, the CCP's ability to measure change in criminal careers before and after treatment was assessed. Given that appropriate treatment has been shown to reduce future recidivism, treated offenders are predicted to have a less serious criminal career than untreated offenders. Treated offenders are also predicted to show a reduction in criminal career severity from pre- to post-treatment. Finally, in Study 4, the CCP's ability to measure change in criminal careers as a function of age was examined.

1.2 Criminal Careers

1.2.1 Origin and Definition of Criminal Careers

The term *criminal career* originated from the criminological literature. It was, in fact, preceded by the term *career criminal*, which was introduced into the literature at the turn of the century when several Western nations formed advisory committees to manage repeat offenders (Gottfredson & Hirschi, 1986). In a landmark study by Wolfgang, Figlio, and Sellin in 1972, the major finding was that within a sample of 10,000 young men in the general population, a small percentage (6.27%) accounted for the bulk of crime in the entire group! This percentage indicated the participation rate or *prevalence* of individuals who have embarked on a criminal career of any given length and who are committing crimes at varying *frequencies* during their criminal career (Blumstein, Cohen, & Farrington, 1988; Farrington & Wikstrom, 1994). Subsequently appearing under several aliases – *persistent* offenders, *chronic* offenders, *habitual* offenders, *high rate* offenders, and *career criminals* – they have been given

consideration by almost all theory and research on crime that were funded by the U.S. Federal government since then (Gottfredson & Hirschi, 1986).

Criminal careers are not exclusive to career criminals, and so a distinction needs to be made between these two constructs. The term *career criminal* is arguably less informative than the term *criminal career* because of its seemingly more restrictive connotation. Blumstein and Cohen (1987) argued that career criminals pertain to a more extreme group of offenders who commit serious crimes at high rates over an extended period of time. In fact, a career criminal is legally defined by the U.S. as a "habitual or repeat offender with two or more prior convictions for violent or drug-related crimes and, under federal sentencing guidelines, are given maximum sentences" (*Dictionary of Law,* 2005). On the other hand, criminal career refers to the longitudinal sequence of offenses committed by a person. Any offender, regardless of the severity of their offenses, can potentially have a criminal career.

Another distinction that needs to be highlighted pertains to the debate in the literature regarding the implications of the construct *career*. By definition, career can mean either a course or progress through life or way of making a living (Farrington, 1987). However, people do not commit crimes exclusively for monetary gain (Blumstein et al,, 1988; Farrington, 1987). Rather, a criminal career simply depicts the longitudinal sequence of crimes (Greenberg, 1996). It is characterized by the onset, recurrence, and termination of criminal activity during an individual's lifetime (Blumstein et al., 1988). It has a beginning, duration, and an end (Farrington, 1992). A course or progress through life, which is essentially a longitudinal sequence of offenses, is the construct adopted in this Program of Research. However, the construct of criminal

career has yet to be clearly operationalized. Also, there is a need for a measure of criminal career that takes into account certain important events (e.g., correctional treatment and aging), which can occur between the onset and termination phases and possibly interrupt the progression of criminal careers.

Finally, the claim that the construct of criminal career is not a theory of crime (Blumstein, Cohen, & Farrington, 1988) needs to be underscored. Rather, criminal career is a means of organizing, structuring, and integrating knowledge about adjudicated criminal activity for the purpose of observation and measurement. Criminal career allows for the quantitative analysis and summation of important criminal career parameters (i.e. onset, duration, and termination). The causes, predisposing factors, and precipitants of criminal activity, as well as variables that maintain or disrupt the progression of offending, were eventually examined in subsequent research on criminal careers.

1.2.2 Issues in Criminal Career Research

1.2.2.1 Longitudinal study of criminal activity

In 1987, Farrington described two major publications that supported a new strategy for advancing knowledge about the explanation, prevention, and treatment of crime. Compelled by the rising rates of crime in urban centres, the U.S. National Academy of Sciences, as well as the U.S. Justice Program Study Group of the MacArthur Foundation, recommended more research on criminal careers. These organizations strongly advised researchers to examine the chronology of all offending

(i.e. criminal career) as opposed to offending only in certain ages. Thus, criminal career research is inherently longitudinal because individual offending is examined from the initiation to the termination of criminal activity.

There are several advantages to using a longitudinal approach to the study of offending. The ages of onset and termination, career length, and the seriousness of offending over a career can be identified (Farrington, 1987). Also, the continuity or discontinuity in offending from one age range to another and the impact of certain events on the course of criminal careers can be examined (Farrington, 1987). Finally, a longitudinal approach can provide important theoretical insights on how best to measure criminal careers (Blumstein et al., 1986).

1.2.2.2 Terms and tools

The terms used to describe the events in a criminal career, as well as the method of measuring criminal careers, tend to vary from researcher to researcher. Using different terminology can impair communication (Glaser, 1992) and so there is a need to adopt consistent terminology in criminal career research. Also, there is a need to adopt a consistent method of measuring criminological variables that are central to the construct of criminal careers, such as age at first conviction, frequency of offending, career length, and career severity.

1.2.2.3 The population of interest

Determining which population should be examined first is important. Recommendations from researchers in the field of criminal career research include focusing preliminary research on serious offenders, given that they tend to persist in their offending (Farrington, 1987, 1999) and so actually have a significant criminal career. In addition, participation in offending should be examined first in males, given that male offenders, compared to female offenders, account for a significantly larger share of crimes as measured by official statistics on total convictions (Blumstein et al., 1986). In prison, males far outnumber females, and thus, are more accessible. For example, there were 12,034 male inmates compared to 379 female inmates in Canadian federal prisons in 2004 (Correctional Service Canada, 2005), yielding a ratio of 100 male inmates to every 3 female inmates. Consequently, the present investigation adhered to two major criteria regarding the population of interest: (1) serious offenders who have committed several crimes and (2) male offenders. In fact, given that male offenders are more accessible than female offenders, only male offenders were included in all four studies in this Program of Research. A measure of criminal career developed for male offenders should be theoretically applicable to female offenders.

1.2.2.4 Sources of offending data

There are potentially five sources of offending data: (1) official crime records, (2) self-report of criminal activity, (3) reports of personal victimization, (4) direct observations, and (5) informant records (Weis, 1986). Each approach has its value in the study of criminal careers (e.g., Blumstein et al., 1986). For example, victimization and

observation measures may be able to approximate better than official records the amount of crime in society. Compared to official records, self-report measures may be able to give an indication of the "dark figure" of unknown crime. However, victimization, observation, and self-report measures may be considered limiting because only a small number of offenders may be sampled or captured using any of these measures. Moreover, victims may not be willing to disclose their victimization and offenders may not be willing to report their criminal activity. From a practical standpoint, official records (e.g., police arrests and convictions) seem a better choice of data source. Not only can they be retrieved easily, but they can also provide a chronology of known criminal activity. Perhaps, these are the reasons for why the majority of research on criminal careers is based on official records (Arnold & Kay, 1999; Farrington, Lambert, & West, 1998). In this Program of Research, only official records were used to examine the criminal career of offenders.

However, official records do not come without limitations. Foremost among its criticisms are insufficient information, different recording practices, and issues in sampling (Weis, 1996). Official records may underestimate the actual number of offenders, the offenses of identified offenders, and offenses in the general population. Nevertheless, this underestimation have been suggested, as early as 1833, to be not necessarily a significant limitation if there is a constant ratio between the actual amount of crime and officially recorded crime (Quetelet, 1833; as cited in Weis, 1986) and if this difference is due to random error rather than systematic bias (Weis, 1986). More recently, Farrington and his colleagues (1998) offered some reassurance with regard to the use of official records, stating that the worst offenders according to self-reports tend

also to be the worst offenders according to official records. In fact, it has been demonstrated that there exists a significant correlation between official and self-report data (e.g., Hindelang, Hirschi, & Weis, 1981). In this Program of Research, official records were the source of offending data.

1.2.3 Existing Models of Criminal Careers

How to conceptualize and model the chronological and longitudinal sequences of criminal activities continue to be the focus of debate in the social sciences. In 1986, Flinn identified two general approaches to the modeling of criminal careers: (1) behavioral and (2) econometric. Fundamentally, behavioral modeling considers only the crime and the penalty imposed for such a crime. Given that criminal activity is the only consideration (i.e. regardless of motive for committing the crime), the measurement and interpretation of criminal career parameters are clear cut (Flinn, 1986). The behavioral modeling approach is also consistent with Blumstein, Cohen, and Farrington's (1988) conceptualization of criminal careers.

In contrast, econometric models are less concerned with behavior. Instead, these models primarily invoke individual decision making, including the offender's preferences and the rewards of criminal activity. Thus, econometric models are able to capture the reasons for the existence of criminal careers and so tend to be more theoretical in nature. In this sense, econometric models can even be viewed as complementary to behavioral models. However, econometric models still need to rely on behavioral models to measure criminal career parameters. For this reason, this

Program of Research has adhered more to a behavioral rather than an econometric model of criminal career.

Earlier behavioral models of criminal careers assumed that career length simply reflects the accumulation of criminal activity (Avi-Itzhak & Shinnar, as cited in Nagin & Land, 1993). However, Lehoczky (1986) argued that historical events, which are fixed at the start of the career (e.g., age at first offense), and dynamic events, which can change during the course of the career (e.g., employment status), can influence the progression of criminal careers. Criminal careers can be viewed as a dynamic process and not simply an accumulation of criminal activity. The present investigation also considers criminal careers as a dynamic process that is open to being changed or modified by life events.

Other behavioral models viewed criminal careers as social events occurring throughout the lifetime (Elder, 1985; Land & Nagin, 1996). Social events that are considered delinquent or criminal are believed to be linked into life trajectories having broader significance, whether those trajectories are criminal or non-criminal in form. Key propositions of the life course perspective are that "transitions are always rooted in trajectories that give them distinctive form and meaning" (Elder, 1985) and that "the same event or transition followed by different adaptations can lead to very different trajectories" (Elder, 1985, p. 35). This Program of Research neither viewed criminal careers as social events nor examined adaptations and life trajectories. Instead, an atheoretical approach was used in the conceptualization of criminal careers.

1.2.4 Past and Future Research Agendas in Criminal Career Research

It has been proposed that the criminal career paradigm is key to advancing our knowledge about the explanation and prevention of crime (Farrington, 1987). In 1986, Blumstein and his colleagues forwarded a three-fold research agenda to study criminal careers. First, they called for new directions in the measurement and modeling of criminal careers. These researchers stressed that a better way of conceptualizing criminal careers is needed before the construct of criminal careers can be studied. Nearly 20 years have passed but this research agenda are still waiting to be addressed in a sufficient and satisfactory manner. This Program of Research was, in part, a response to this call.

Second, Blumstein and his colleagues (1986) supported ongoing basic research on the parameters (i.e. onset, duration, and termination) of criminal careers, as well as the correlates of these parameters. It is possible that a correlate of a criminal career may be a correlate that is specific only to a certain criminal career parameter. For example, close ties with criminally minded peers may be a correlate of the onset of criminal careers but not a correlate of the duration of criminal careers. In a similar vein, substance abuse may be a correlate of the length of criminal careers but not a correlate of the termination of criminal careers. The unique association of a correlate with a specific parameter has the potential to inform us of possible ways to modify, interrupt or terminate persistent offending. In this Program of Research, treatment and age as correlates of criminal career severity were examined.

Finally, Blumstein and his colleagues (1986) strongly encouraged the assessment of policies and procedures that can help terminate criminal careers. Today, programs

designed to reduce future offending are routinely implemented, with their efficacy or effectiveness regularly being evaluated. This Program of Research examined change in criminal careers due to treatment.

Even after the surge of research about criminal careers in the late 1980s and early 1990s, several important questions remain unaddressed or insufficiently answered. In a paper expounding on a criminal research agenda for the next millennium, Farrington (1999) posed several key questions about criminal careers. “How long does offending last?” “When do people stop committing crimes?” “How serious are the criminal careers of certain types of offenders?” “How far is there escalation or de-escalation in the seriousness of offending during criminal careers?” Farrington stressed that the most salient goal of criminal career research is to establish and strengthen the prediction of future criminal careers. All of the above concerns, especially those pertaining to the seriousness of criminal careers and its contribution to the prediction of recidivism, were examined in this Program of Research.

1.3 Necessary and Sufficient Conditions for the Conceptualization and Measurement of Criminal Careers

Based on the extant literature, the following conditions have been deduced to be necessary and sufficient for the conceptualization and measurement of criminal careers, hence, construct validity.

1.3.1 Onset

A criminal career has a beginning. When a person commits a crime for the first time, one cannot really tell with certainty whether that crime is the beginning of the person's criminal career or whether it is his first and last offense. The age at first offense, however, is one of the best predictors of the future course of criminal careers (Blumstein, Farrington, & Moitra, 1985; Farrington et al., 1990). It is generally true that a relatively early onset of criminal activity predicts a high frequency and duration of official offending (Arnold & Kay, 1999; Farrington, Lambert, & West, 1998; Farrington et al., 1990; Farrington & Wikstrom, 1994; Loeber & Le Blanc, 1990). Recidivism studies using either official and self-report data have shown that 73% of those convicted at ages 10 to 16 (juvenile age range) were reconvicted at ages 17 to 24, in comparison with only 16% of those not convicted as juveniles, and that 45% of those convicted as juveniles were reconvicted at age 25-32, in comparison with only 8% of those not convicted as juveniles (Farrington, 1992). A study in Montreal, Canada showed that an earlier compared to a later onset of antisocial career predicted longer career duration (Le

Blanc & Frechette, 1989). Consequently, the age of onset of offending is a variable with important predictive applications.

Several researchers have proposed that the "natural" onset of a criminal career is the time at which an individual commits his first offense (e.g., Farrington, 1992). However, a natural onset is sometimes difficult to reliably ascertain or to obtain because of unreported crimes. For instance, offenders may choose not to report crimes that they had earlier committed but for which they were not arrested and convicted. Also, crimes committed in childhood may be considered negligible and so do not make their way into official records. In the Montreal study (Le Blanc & Frechette, 1989), official (14.6 years) and self-report (10.7 years) age of onset was, on average, discrepant by four years. Loeber (1987), in his detailed review of the literature on age of onset, noted that the prevalence of offending by elementary school-aged children is rarely reflected on police and court records, which is unfortunate because earlier studies had shown that a majority of chronic and violent offenders had a childhood history of disruptive behaviors and aggression.

1.3.2 Termination

A criminal career has an end but the concept of a finite career length is somewhat controversial. Lehoczky (1986) argued that there could be no logical point at which a criminal career can end, except death. Any former criminal could be presented with another opportunity to commit a crime. There is no single probability model of criminal career, however, that could be expected to represent an exact truth. Rather, models that are approximately true, that account for important effects, and that offer a

tractable analysis need to be constructed. More specifically, models that offer a means of defining and estimating termination, for example, an offense-free period for a certain amount of time, need to be developed.

1.3.3 Duration

A criminal career has duration. Ideally, the length of a criminal career is from the age of first offense to the age of death. The most practical measure of criminal career length, however, is the time interval between the first and last offense (Farrington, Lambert, & West, 1998).

The duration of criminal careers is predicted to vary across offenders. Greenberg (1996) hypothesized that because participation in criminal activity is more widespread for teenage males than for adult males, many criminal careers must have a short duration. In the general population, after the peak in the rate of offending (i.e. late teens to early 20s), criminal activity declines with increasing age (Greenberg, 1996), which is consistent with the observation that termination rates are higher in the 20s compared to the 30s (Blumstein et al., 1986).

The research on *residual* career length, which is defined as the expected time remaining in criminal careers, has yielded interesting findings (Greenberg, 1996). The prediction for 20-year-olds whose age at first offense is 18 years is about a five-year residual career length, which indicates duration of seven years. The prediction for chronic, serious offenders in their 30s, however, is about a 10-year residual career length, which indicates that termination would start occurring in their 40s.

1.3.4 Severity and Change in Severity

As per the definition of a criminal career, severity is an important aspect of criminal careers. Indices of criminal career severity include frequency and type (i.e. violent/nonviolent) of offending (e.g., Blumstein, Cohen, & Farrington, 1988;

Farrington & Wikstrom, 1994; Gottfredson & Hirschi, 1986) and sentence length (e.g., Bellanger, 2001; Campbell, 1993; Di Placido et al., 2006). Offenders with chronic and violent pattern of offending and a long history of incarceration are considered to have a serious criminal career (e.g., Farrington, 1999; Greenberg, 1996).

Life events, such as marriage, employment, education, and treatment, can influence criminal career severity (e.g., Farrington & West, 1995; Sorensen, 2000; Votey, 1991). Change in criminal career severity is often estimated through change in the indices of criminal career severity. For example, evaluations of the impact of treatment on future offending often use yes/no re-offense, violent/nonviolent re-offense, and pre-post-treatment comparisons of frequency and type of offending (e.g., Di Placido et al., 2006; Looman, Abracen, & Nicholaichuk, 2000; Nicholaichuk, Gordon, Gu, & Wong, 2000).

1.4 Criminal Careers and Recidivism

1.4.1 The Impact of Recidivism

The important finding by Wolfgang et al. in 1972 that 6.27% in a group of 10,000 young men accounted for the majority of crime within the group has been replicated. Relatively more recent studies have yielded comparable estimates of 5% to 6% of identified offenders being responsible for an estimated 50% to 60% of all crimes in the general population (Farrington, 1999; Farrington, Lambert, & West, 1998). These offenders are recidivists (i.e. repeat offenders) and create such a staggering loss to the government and especially to their victims. In Canada, the police, courts, and

correctional services cost the government $10 billion each year (Department of Justice Canada, 2003). When personal costs, such as physical costs and loss of productivity that victims of crimes sustain, are added to the equation, the cost of crime, including recidivism, skyrocket to $46 billion per year (Department of Justice Canada, 2003). And still, there are other costs that cannot be quantified, including the pain of losing a loved one and the feeling of being unsafe. Finally, the effects of crime ripple through all areas of our lives, including health, social services, education, labour, and employment (Department of Justice Canada, 2003).

1.4.2 The Assessment of Recidivism

There have been considerable efforts to decrease the huge costs associated with crime and recidivism. One of these efforts was to improve the prediction of recidivism. There are currently several instruments assessing risk of recidivism that proliferate the Canadian criminal justice system. As was previously noted, criminal history, which is consistently found to be one of the strongest predictors of recidivism, is included in all of the major risk assessment instruments being used today.

In 2001, Kroner and Mills examined the predictive accuracy of five assessment instruments purported to measure risk of recidivism in a sample of 97 male violent offenders. The instruments they examined included the *Psychopathy Checklist – Revised* (PCL-R), *Level of Service Inventory – Revised* (LSI-R), *Historical, Clinical, and Risk Management Factors – 20* (HCR-20), *Violence Risk Appraisal Guide* (VRAG), and *Lifestyle Criminality Screening Form* (LCSF). The dependent variable or outcome for

this study – any new violent and nonviolent convictions incurred after release from prison – was extended to institutional misconduct and revocation of parole.

The authors found that the VRAG had the highest correlation with institutional misconduct, nonviolent convictions, and revocations, whereas the LSI-R had the highest correlation with total and violent convictions. However, no instrument was any better in significantly predicting any of the outcome measures. In others words, there were no significant differences among the five instruments in terms of their predictive ability, perhaps because the content of the instruments are not necessarily different from each other.

In the same year, Barbaree, Seto, Langton, and Peacock examined the predictive accuracy of several assessment instruments for adult sex offenders. Six actuarial (i.e. empirically and statistically validated) instruments, including the Static-99, PCL-R, VRAG, *Sex Offender Risk Appraisal Guide* (SORAG), *Rapid Risk Assessment of Sexual Offense Recidivism* (RRASOR), and *Minnesota Sex Offender Screening Tool – Revised* (MnSOST-R), and one guided clinical approach, the *Multifactorial Assessment of Sex Offender Risk for Recidivism* (MASORR), were used to assess risk of recidivism in 215 sex offenders released from prison. Recidivism was operationalized as either general (all re-offense), serious (violent and sexual only), or sexual recidivism only.

In Barbaree et al.'s (2001) study, the VRAG and SORAG had the highest correlation with general recidivism, the SORAG and Static-99 had the highest correlation with serious offenses, and the RRASOR had the highest correlation with sexual recidivism. In addition to the RRASOR, only the SORAG and Static-99 predicted sexual recidivism. The PCL-R predicted general and serious recidivism but

not sexual recidivism. What was impressive was that almost all of the static items within each instrument, including criminal history, were significantly correlated with all of the measures of recidivism.

From the mid-1990s to early 2000, certain risk assessment instruments started incorporating a methodology to assess change in risk of recidivism due to treatment. The *Violence Risk Scale* (VRS; Wong & Gordon, 2006) and the *Violence Risk Scale: Sexual Offender Version* (VRS: SO; Wong, Olver, Nicholaichuk, & Gordon, 2002) utilized the Stages of Change Model (Prochaska & DiClemente, 1986; Prochaska, DiClemente, & Norcross, 1992) to quantitatively measure changes in behavior, attitude, and affect directly related to risk. However, if criminal behavior is measured through frequency count or rating scale methods, the impact of treatment on future criminal behavior may not be fully appreciated. A metric that can account for the above as well as reveal patterns in individual offending can help facilitate better understanding of the impact of treatment on criminality.

1.4.3 Criminal Careers as One of the Predictors of Recidivism

Contemporary assessment of risk of recidivism has focused on utilizing both static and dynamic variables. Dynamic factors pertain to components of risk that can change whereas static factors are commonly historical in nature. The results of a meta-analysis of 131 studies published since 1970 suggested that the best static predictors include age, criminal history, and family factors (e.g., family criminality, family rearing practices, etc.), whereas the best dynamic predictors include antisocial attitudes and values, psychopathy, peers, and substance abuse (Gendreau, Goggin, & Little, 1996).

In general, the variables that have been found to predict risk of recidivism have been adequately operationalized. A striking exception is criminal careers, which has been problematic to quantify (Hemphill et al., 1998). In general, criminal career has been treated as criminal history, usually quantified in terms of participation rate (i.e. percentage of adults committing crimes) or in terms of the rate of offending, or both (Blumstein et al., 1988). However, quantifying age of onset (or alternatively age at first conviction), as well as the severity and variety of offending, can help better understand criminal careers (Loeber & Stouthamer-Loeber, 1996). As previously stated, there is much to profit from understanding criminal careers and its contribution to the prediction of recidivism.

2. THE *CRIMINAL CAREER PROFILE* AND NECESSARY AND SUFFICIENT CONDITIONS FOR THE CONCEPTUALIZATION AND MEASUREMENT OF CRIMINAL CAREERS

2.1 General Description of a *Criminal Career Profile*

Ideally, a simple metric to measure the onset, continuation, seriousness, and termination of a pattern of criminal activities is needed to facilitate the description and measurement of criminal careers. The *Criminal Career Profile* (CCP), which uses commonly available criminological information and requires minimal professional skills in its execution, is a simple and precise measure of criminal careers. The CCP, developed by Wong, Templeman, Gu, and Andre in 1996, is a chronological representation on a Cartesian plane of the time in years an offender has spent in prison (*y*-axis) plotted against the time in years spent out of prison (*x*-axis) of all incarcerations and time in the community (see Figure 2.1 for an example).

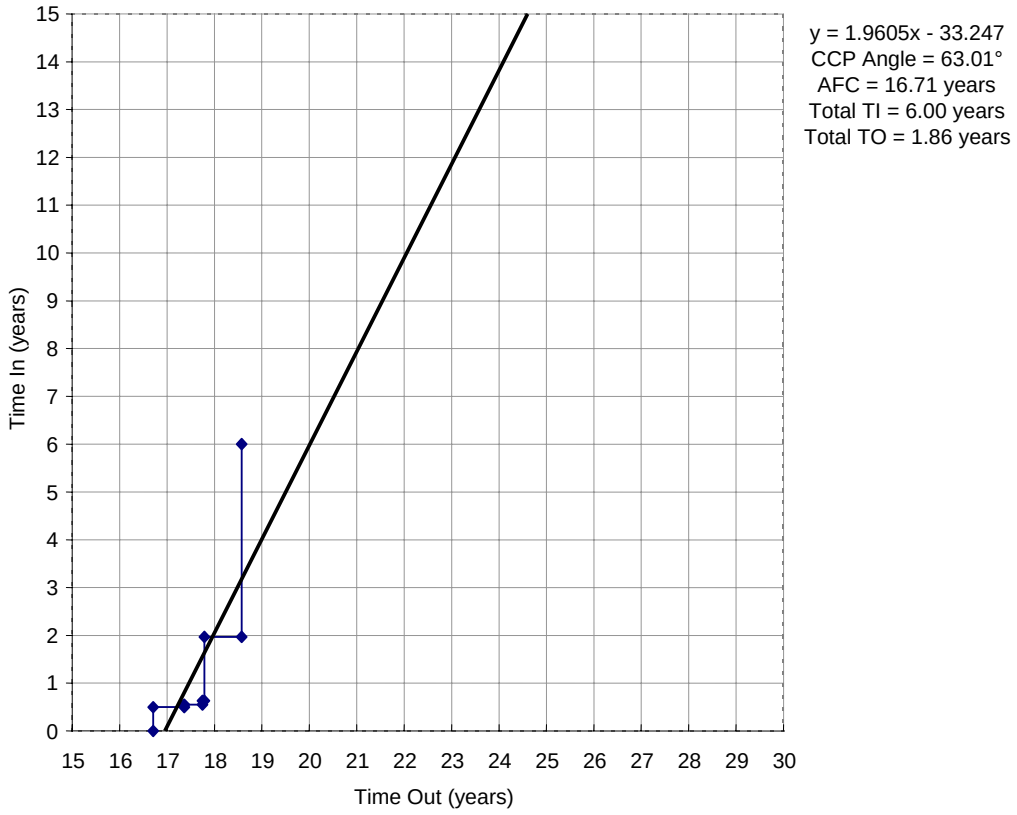

Figure 2.1: The CCP of a Violent, Psychopathic Offender (CCP Angle = 63.01°; AFC = 16.71 years; Total Time In = 6.00 years; Total Time Out = 1.86 years)

Note: The graph was enlarged to show the steps.

With the exception of the first and last data points, all data points on a CCP graph are connected by vertical and horizontal lines, thus, representing a step graph. Each offender's total Time Out (i.e. time in years spent out of prison) plus total Time In (i.e. time in years spent in prison) is equal to his age at the time when he is released from prison. The unit of measurement for all times plotted on a CCP is in years.

2.2 *Criminal Career Profile* Parameters: Onset, Termination, and Duration

2.2.1 Onset

The onset of a criminal career, as measured by the CCP, is the age when the offender was convicted for the first time (i.e. age at first conviction), regardless of the type of offense. The age at first conviction may vary depending on the type of crime committed. Detection and conviction of the more common crimes, such as break and enter and assault, may occur earlier, whereas that of sexual crimes, such as incest, may occur years later. For example, sex offenders commit property crimes earlier than they do sexual crimes (e.g., Olver, 2003).

2.2.2 Termination

One could argue that an offender never ends his criminal career. Instead, the frequency of offending may have decreased to a point that approaches zero but never becomes zero. As such, the most recent Time Out with no convictions and no time served likely heralds the termination phase. In other words, the termination phase can be gauged by identifying at what point during the criminal career the CCP angle starts to become smaller, such that it is close to 0°. This was not tested in this Program of Research but is a worthy consideration for future research.

On the other hand, several *pseudo* or artificial termination points can be specified depending on the data collection date or number of years of follow-up. A violent offender who survives ten years before re-offending with a major offense obviously has his criminal career under better control than another violent offender who

recidivated quickly with an equally serious offense. Although a *true* termination phase has yet to be achieved, this differential rate and severity of recidivism can inform us of the survival rate of offenders.

2.2.3 Duration

From the CCP approach, a criminal career spans the time from the date of first conviction (i.e. the age at first conviction) to the period when the regression line on the CCP starts to level off (i.e. the angle of the regression line is close to 0°). As noted in the section about termination, several termination dates can be specified on the CCP and, thus, the duration of a criminal career spans the age at first conviction to this designated termination phase.

2.3 The *Criminal Career Profile* Regression Line: A Measure of Criminal Career Severity

A regression line (see Figure 2.1) is calculated to assess the strength of the relationship between Time In (y-axis) and Time Out (x-axis). The regression line is the line that passes most closely through the points on the graph. In statistical terms, it is a linear regression that minimizes the sum of the square of the deviations for all the points and so is the best-fit line for all the points on the graph (Howell, 1997). The regression line is represented by the equation

$$y = mx + c \quad \text{(Equation 2.1)}$$

where m is the slope or gradient of the regression line and c is the y-intercept.

The slope of a regression line is the ratio of rise over run and mathematically represented as

$$m = \Delta y / \Delta x \text{ (Equation 2.2)}$$

where Δy is the amount of change on the y-axis and Δx is the amount of change on the x-axis. The slope of a regression line is essentially a tangent function (i.e. ratio of the opposite over the adjacent side of a right triangle), which is nonlinear and has values ranging from 0 to infinity. By definition, the slope of a regression line has important implications. High m values mean a steep regression line; low m values a shallow one. As such, the slope of the CCP regression line can be used as an index of criminal career severity. High slope values indicate severe criminal careers; low slope values indicate less severe criminal careers.

2.3.1 Describing and Comparing Criminal Career Profile Regression Lines: Angles vs. Slopes

The regression line can be described relative to the angle the regression line makes with the horizontal. The angle is directly related to the slope through the equation

$$\text{Angle} = \text{ATAN}(m)*180°/\pi \text{ (Equation 2.3)}$$

where ATAN is the arctangent function that produces the corresponding angle for the tangent function *m*. In other words, ATAN(*m*) produces the angle whose tangent equals *m*. The angle produced is in radians, which is converted to degrees by multiplying radians by 180°/π, where π equals 3.14. Given that the CCP is a step function, all regression lines produced by the CCP fall in the first quadrant of a unit circle diagram and have slopes ranging from 0 to infinity that correspond to angles ranging from 0° to 90° (see Appendix A).

A number of regression lines were calculated from a slope vs. angle graph to determine at which point on the graph slopes and angles start to deviate from a linear relationship (see Appendix B). The goodness of fit index, R^2, of the regression line revealed near linear relationship between slopes and angles, conservatively up to slope value of 1.19 or 50° (R^2 = .9855) or, arguably, up to slope value 2.14 or 65° (R^2 = .9450). As such, using either slope or angle to describe the regression line within the near linear range is therefore a matter of preference.

The mean CCP slope of 414 offenders included in this Program of Research was 0.64, with a 90% CI that the true mean is between 0.60 and 0.68. Ninety percent of the cases have a CCP slope within the range of near linear relationship between slopes and angles. The range of slope values where 90% of the cases fell (i.e. from 0 to about 2), however, seems restricted compared to that of angles (i.e. from 0 to about 65°). Having a scale with a wider range would be preferable in describing and comparing the magnitude of criminal career severity of offenders. Also, using angle rather than slope to describe the CCP graph and the direction of the regression line appears intuitive. As such, angle rather than slope was used to describe the regression line. In other words,

the CCP angle was used as an index of criminal career severity. Large CCP angles suggest severe criminal careers; small CCP angles suggest less serious ones. For example, Offender A's CCP angle, compared to that of Offender B, is larger by almost 20°, indicating that Offender A has a more severe criminal career than Offender B (see Figure 2.2.).

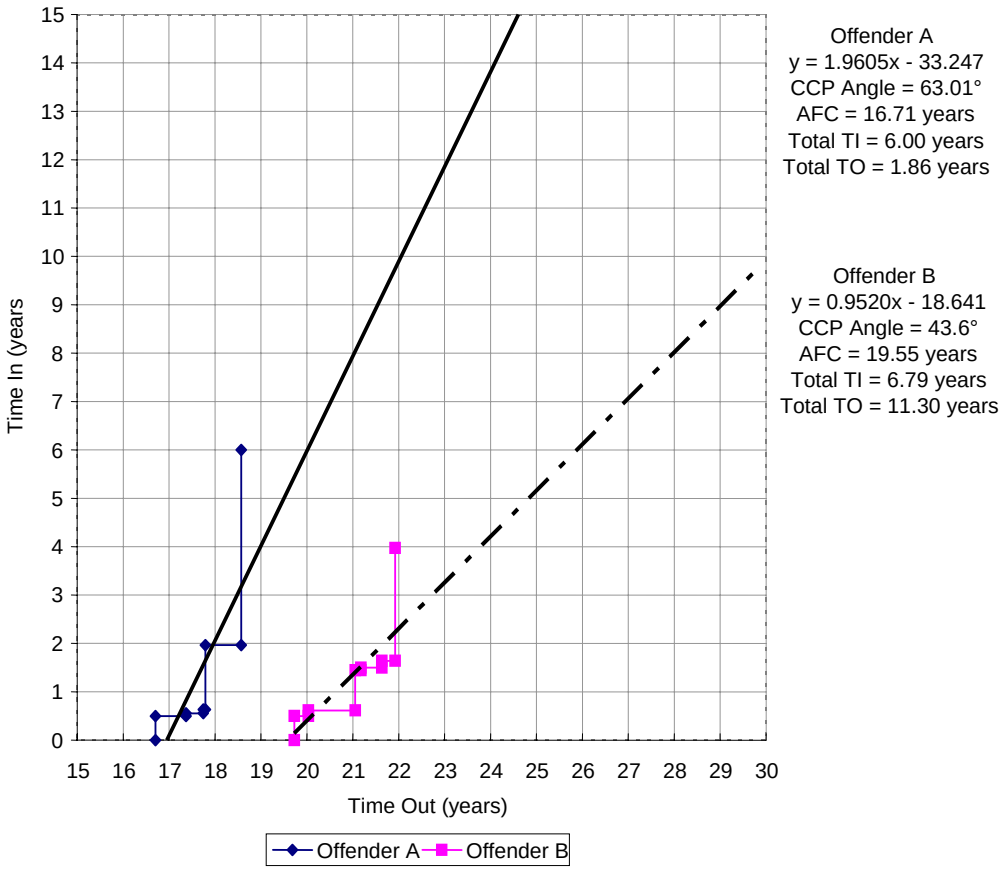

Figure 2.2: A Comparison between the CCP of Offender A (CCP Angle = 63.01°) and Offender B (CCP Angle = 43.6°)

Note: The graph was enlarged to show the steps.

2.3.2 The Size of the Criminal Career Profile Angle

The size of the CCP angle is influenced by number and length of Time In (i.e. sentence or incarceration). According to the *Criminal Code of Canada* (Section 781.1; Greenspan & Rosenberg, 2005), a sentence must be proportionate to the gravity of the offense. As such, sentence length is an indication of the seriousness of offenses, with longer sentences being imposed on multiple convictions and serious crimes (e.g., Di Placido et al., 2006). Even when mitigating variables, plea bargains, and other negotiations, which can influence a sentence, are present, sentence length can still provide an estimate of offense severity (e.g., Bellanger, 2001; Campbell, 1993).

Consequently, more time spent in prison than time spent in the community would generate a CCP that has a steeper regression line and larger angle. Larger CCP angles suggest more serious criminal careers. With regard to system-generated offenses, such as failure to appear in court, they are, by and large, minor offenses and so carry minor penalties. The penalties may include a fine or, at most, a very short period of re-incarceration, which do not significantly impact on the angle of the regression line.

2.4 General Considerations for Constructing a *Criminal Career Profile*

Several pieces of information are needed to generate a CCP. The main data needed are the offender's date of birth, chronological dates of conviction, and sentence length received for each conviction. Additional information is needed in special cases, for example, when assessing the impact of correctional treatment on an offender's CCP

(i.e. a significant reduction in CCP angle from pre- to post-treatment). In such cases, the dates of release after treatment and all recidivism data post-release are also used.

2.4.1 Databases Needed to Construct a Criminal Career Profile

Sentence length, from where Time In and ultimately Time Out are calculated, is recorded in at least two databases maintained by the Canadian federal government: the *Canadian Police Information Centre* (CPIC) and the *Offender Management System* (OMS). The CPIC lists all adult charges and convictions, conviction dates, and penalties in chronological order, starting with the earliest conviction date. Its format is simple and very easy to understand. The CPIC was the major source of data for the CCP in the present investigation.

The OMS is actually linked to the CPIC but the OMS contains considerably more data, including those pertaining to risk, treatment and management, and discharge. Young offender (YO) information is sometimes included in both databases. Both databases are password protected and so can be accessed only by authorized personnel. (See Appendix C for additional information about these databases.)

2.4.2 Calculation of Time In

When calculating *Time In*, only two third of the sentence is plotted on the CCP. The reason for so doing is the Canadian government's mandatory statutory release for federal offenders (Bill C-33; The Solicitor General of Canada, 2003), whereby offenders are entitled to be released into the community two third of the way into their sentence completion or Warrant Expiry Date (WED). The remaining one third of the offender's

sentence is served in the community to help the offender gradually re-integrate into society. Offenders serving time for a provincial sentence tend to be released also after serving two third of their sentence. There were two reasons for choosing to use only two third of prison sentence in calculating Time In: (1) to make CCP calculations uniform in the present cases and (2) to allow for comparisons with the results of three earlier published studies that have used the CCP and calculated Time In as two third of prison sentence. In other cases, actual time served could also be used to calculate CCPs.

2.4.3 Inclusion and Exclusion Criteria

Technically, a regression line can be generated for a minimum of three points on a CCP graph or one Time In and one Time Out. Consistent with the conceptualization of criminal career (e.g., Arnold & Kay, 1999; Farrington, Lambert, & West, 1998; Smith, Smith, & Noma, 1984), however, only individuals who have a number of charges and convictions that have resulted in several incarcerations are considered to have a criminal career. In the present investigation, only offenders who had at least two incarcerations (Time In) and two prison releases (Time Out) were considered to have a valid CCP.

Conversely, offenders who do not have two Time In and two Time Out are not considered to have a criminal career and were excluded from the present investigation. Some offenders may have committed one or two crimes with minor penalties, and others may have committed a heinous crime, which has resulted in a serious penalty, but these instances do not necessarily mean that these offenders have a criminal career. As had been indicated, the population of interest when examining criminal careers are chronic and serious offenders.

In special cases, such as comparing pre- and post-treatment CCPs, a post-treatment CCP may be 0° when there are no Time In after the prison release following treatment. When there are no new Time In, total Time Out becomes longer and, consequently, the magnitude of the overall CCP angle becomes reduced. However, there may be times when there are Time In after the prison release following treatment but a post-treatment CCP still cannot be calculated. Just as the pre-treatment CCP requires at least two Time In and two Time Out, so does the post-treatment CCP. If this condition is not met, a post-treatment CCP cannot be generated. This is not problematic if the new conviction received a suspended or very short sentence. However, it becomes problematic when the conviction is serious and the corresponding sentence is considerable. Hence, the post-treatment CCP angle cannot be considered to be 0°. The best practice is to generate a cumulative and up-to-date CCP and compare it to the pre-treatment CCP to examine change in CCP angles over time.

2.5 Description of *Criminal Career Profile* Data Points

The CCP includes all instances and length of Time In (sentence or incarceration) and Time Out (time in the community) from the date of first conviction to the date of the final release. For the purposes of the present investigation and unless otherwise specified, only data up to the date of release following admission for intensive correctional treatment were included in calculating CCPs to exclude possible confounding effects of treatment on the CCP regression line.

As per the CPIC, the following data points (i.e. Age at First Conviction, Time In, and Time Out) in the order in which they are plotted on the graph, are described (see Figure 2.1; see Appendices D to I for software used and for tables containing CCP data).

2.5.1 Age at First Conviction

The first datum on a CCP is the age at first conviction (AFC), defined as the offender's age in years at the time when he was first convicted by the court for a criminal offense. Mathematically, the AFC is derived by subtracting the offender's date of birth from the date of his first conviction.

2.5.2 Initial Time In

The second datum on a CCP is the length of time (two third of sentence) that the offender has spent in prison for the *first* time, regardless of whether this first sentence is for his first conviction. The initial Time In is the vertical line on the graph that is closest in distance to the *y*-axis.

There are times when offenders do not receive a sentence for their first conviction. For example, the offender's crime may be only a petty misdemeanour and, consequently, may not warrant a jail term. Also, an offender who has committed an offense for the first time might receive a more lenient penalty, presumably because he does not have a criminal history yet and so might be considered as having a low risk of re-offense.

In the above cases, there are several sentencing options. The offender may be diverted to work in the community or required to pay a fine. In other cases, he may

receive a probation order or a suspended sentence, meaning that he does not have to serve the sentence immediately but only when he incurs another conviction. On the CCP, what is graphed is the first sentence that was actually served, represented by the first vertical line closest to the *y*-axis.

2.5.3 Initial Time Out

The initial Time Out is the third datum on a CCP graph. It is the length of time that the offender has lived in the community, from the time he was released from prison to the time when he returned to prison to serve another, subsequent sentence. This datum is represented as the horizontal line that is closest in distance to the *x*-axis.

2.5.4 Subsequent Time In

Subsequent Time In (two third of sentence) is calculated in the same way as the initial Time In. The first subsequent Time In appears as the second vertical line that is closest to the *y*-axis. It indicates that the offender has recidivated and is now serving another prison term.

2.5.5 Subsequent Time Out

Subsequent Time Out is calculated in the same way as the Initial Time Out. It is the length of time during which the offender lived in the community prior to serving another sentence.

2.5.6 Time In for Index Offense at Pre-Treatment

Serious offenders may undergo intensive correctional treatment anytime during their incarceration. As had been indicated, only data up to the prison release following admission for intensive correctional treatment were included in calculating CCPs in the present studies, unless otherwise stated. The index offense in the present studies is the offense being served upon admission to intensive correctional treatment and the last Time In is the sentence for the index offense.

2.6 Modifications to the Original *Criminal Career Profile*

Wong et al. (1996) published the first study on the CCP. To construct CCPs (see Appendix J for an original CCP), Wong et al. (1996) used specialized software called CrimeWare, which was developed by Templeman (1996). Since then, Wong and Gu (personal communication, September 17, 2002) have continued to refine the construction of the CCP. For example, these researchers started using accessible software, such as Microsoft Excel (Microsoft Corporation, 2002) and Corel Paradox (Corel Corporation, 1997) to construct CCPs.

In addition to taking into account the modifications carried out by Wong and Gu, this Program of Research continued to refine the original CCP. First, sentence length was calculated according to the guidelines set forth in the *Sentence Management Manual* (Correctional Operations and Programs, 2001; see Appendix K) published by Correctional Service Canada (CSC) to ensure that sentence length is calculated uniformly. Second, the age at first conviction (AFC) in years was consistently plotted on

the graph to increase the accuracy of the regression line, which is a measure of criminal career severity. Third, each datum on the CCP was specified and operationalized to increase reliability in calculating the various parameters of a criminal career. Fourth, in special cases, such as comparing pre- and post-treatment CCPs, the termination point of pre-treatment CCPs and the initial points of post-treatment CCPs were specified and operationalized to create a clear demarcation between pre- and post-treatment CCPs, as well as to specify where along a criminal career an offender received correctional treatment for his offending. The CCP was also applied to another special case – examining the effect of age on criminal careers – by calculating CCPs at different time periods for each offender. Fifth, when comparing the severity of criminal careers, angles rather than slopes were consistently used as the metric of comparison. Finally, the appearance of the CCP graph was changed (See Figure 2.2) to allow for visual comparisons of CCP angles. The x and y axes have similar values of 40 years each, totalling 80 years, which reflects the life expectancy of an average Canadian (Statistics Canada, 1999, 2003).

2.7 The *Criminal Career Profile* as a Measure of Criminal Career

The CCP is intended to provide a measure of the onset, duration, and termination of criminal careers, as well as a quantitative measure or an index of criminal career severity and a means of measuring change in severity (e.g., from pre- to post-treatment or from one age range to another). The CCP is intended to provide a chronological and cumulative measure of criminality. The CCP takes into account a number of

criminological variables, such as frequency and length of incarcerations, to assess the seriousness of criminal history. The CCP can provide more information regarding criminal careers compared to frequency and rating indications of criminality. Taken altogether, the CCP appears to satisfy the necessary and sufficient conditions for the conceptualization and measurement of criminal career as discussed in Section 1, and therefore, appears to have construct validity.

3. STUDY ONE: THE *CRIMINAL CAREER PROFILE* OF PSYCHOPATHS VS. NONPSYCHOPATHS, AND RECIDIVISTS VS. NONRECIDIVISTS

The objective of Study 1 was to assess the *Criminal Career Profile*'s (CCP) criterion validity, more specifically the CCP angle's criterion validity using a group of psychopaths/nonpsychopaths and recidivists/nonrecidivists. Psychopathy, considered a personality trait and measured by the *Psychopathy Checklist – Revised* (PCL-R; Hare, 1991), manifests in aggressive, amoral, or criminal behavior with very little empathy and remorse. Psychopathy has been implicated in a disproportionate amount of serious, repetitive crime and violence.

Compared to nonpsychopaths, psychopaths are more likely to have contact with the law at an earlier age, engage in more violence and aggression, commit more offenses per year of being free, and incur more institutional offenses (Wong, 1984). Psychopaths are more likely to have committed more violent and nonviolent offenses, to have more prison terms served, and to have spent more months in prison (Hart & Hare, 1989). They are more than twice as likely to have used a weapon, threat, and instrumental aggression both inside and outside of prison (Serin, 2001). Treatment does not seem to

impact significantly on their future criminal behavior (e.g., Seto & Barbaree, 1999). They are less likely to complete treatment, derive any benefits from it, and show clinical improvement (Ogloff, Wong, & Greenwood, 1990). As such, psychopaths are at a higher risk to re-offend and are more criminally active throughout much of their life span (e.g., Grann, Langstrom, Tengstrom, & Kullgren, 1999; Hare, 1991; Hare, Strachan, & Forth, 1993; Harris, Rice, & Cormier, 1991; Hemphill, Hare, & Wong, 1998). Taken altogether, it is predicted that the criminal career of psychopaths is worse compared to that of nonpsychopaths.

Similarly, within the group of psychopaths and nonpsychopaths, the criminal career of recidivists is predicted to be worse than that of nonrecidivists. As such, criminal career severity, as measured by CCP angles, should correlate with psychopathy, as measured by the PCL-R, and recidivism. In this sense, both psychopathy and recidivism can be considered a proxy or estimate of criminal career severity against which the CCP angle can be evaluated.

3.1 Hypothesis

Psychopaths have a larger mean CCP angle than nonpsychopaths (Hypothesis 1). Recidivists have a larger mean CCP angle than nonrecidivists (Hypothesis 2).

3.2 Method

3.2.1 Sample

Twenty-five psychopaths (i.e. PCL-R score of 25 and above) and 25 nonpsychopaths (PCL-R score of less than 25) were chosen from a group of offenders who had already been rated on the PCL-R for research purposes. Seven psychopaths and seven nonpsychopaths were removed from the sample because they failed to meet the inclusion criteria for the CCP of at least two prison terms and two prison releases, yielding a final sample size of 36 offenders. The offenders who were removed did have numerous charges, including for serious crimes, but these charges resulted only in one or two convictions with long sentences and less than two prison releases.

Out of the 36 offenders, 20 (55.6%) were Aboriginal, 14 (38.9%) were Caucasian, and 2 (5.6%) were Black. The CCP angles of the two predominant ethnic groups – Aboriginal (M = 32.13°, SD = 15.32°) and Caucasian (M = 38.28°, SD = 17.11°) – were comparable, $t(34) = 1.10$, $p = .280$. The mean age of the offenders was 31.33 (SD = 6.18) years old upon admission to the RPC and 31.72 (SD = 6.17) years old upon discharge from the RPC, either into the community or back to their parent institution. They were in treatment for 4.62 (SD = 3.12) months.

Within 2½ consecutive years of their release into the community, 17 offenders (47.2%) remained free of violent convictions, whereas 19 offenders (52.8%) were convicted of another violent offense. Those who re-offended were referred to as *recidivists*, whereas those who did not re-offend were referred to as *nonrecidivists*. The recidivists (M = 4.92; SD = 2.98) and nonrecidivists (M = 4.35; SD = 3.30) did not differ

significantly in length of treatment (months), $t(34) = .54$, $p = .592$. (More information about the sample is provided in Table 3.1.)

The offenders were referred by their parent institution between 1994 and 2000 to the Regional Psychiatric Centre (RPC) Prairies, specifically to the Aggressive Behavior Control Treatment Program for treatment and management of violence and aggression. The sample's index offense, the offense for which they were serving time upon admission to the RPC, was violent. Offense type (e.g., violent, nonviolent, etc.) was determined by the *Criminal Code of Canada* (The Parliament of Canada, 2001).

In addition, risk of future recidivism, as assessed by the *Violence Risk Scale* (VRS; Wong & Gordon, 2006), was available for both psychopaths and nonpsychopaths. Thirty-one out of the 36 offenders were rated as high-risk (VRS score of 45 and above) and the remaining 5 offenders – 1 psychopath and 4 nonpsychopaths – were rated as medium-risk (VRS score between 31 and 45) for violent recidivism after treatment.

3.2.2 Setting

The Regional Psychiatric Centre (RPC) Prairies, located in Saskatoon, Saskatchewan, is a secure psychiatric hospital for federal offenders. The RPC can accommodate up to 206 patients. (See Appendix L for further description of the RPC.)

3.2.3 Instruments and Procedures

The criteria used to assess the CCP angle's ability to measure criminal career severity were psychopathy, as measured by the PCL-R, and yes/no violent recidivism after treatment.

3.2.3.1 The Criminal Career Profile

The construction of a CCP and calculation of a CCP angle were described in detail in Section 2. To exclude possible confounding effects of treatment on criminal careers, only convictions and releases pre-RPC admission were used to calculate CCP angles.

3.2.3.2 The Psychopathy Checklist – Revised

The *Psychopathy Checklist – Revised* (PCL-R; Hare, 1991, 2003; see Appendix M for a list of PCL-R items) is a valid measure of psychopathy (Serin & Amos, 1995). The PCL-R has been found to be significantly correlated with criminal recidivism (Hare, 1991) and, as such, has been used to assess risk of future recidivism. The instrument consists of 20 items, each scored on a 3-point scale: 0, indicating that it definitely does not apply; 1, that it applies somewhat or only in a limited sense; and 2, that it definitely does not apply to the person (Hare, 1991). Hare (1991) designated a cut-off score of 30 out of a possible total score of 40 as being clinically significant; however, a cut-off score of 25 has been found to be also appropriate for research purposes (Harris, Rice, & Cormier, 1991). The PCL-R scores can be divided into *low* (PCL-R < 20), *medium* ($20 \leq$

PCL-R < 30), and *high psychopathy* (PCL-R ≥ 30). (See Appendix N for more information about the factor structure of the PCL-R.)

Reliability and validity of the PCL-R. The reliability of the PCL-R has been repeatedly demonstrated (e.g., Hare et al., 1990; Hare, 2003; Simourd & Hoge, 2000). Inter-rater reliability coefficients ranged from .88 to .92 for the PCL (Schroeder, Schroeder, & Hare, 1983), and from .92 to .97 for the PCL-R 2nd Edition. Internal consistency coefficients ranged from .85 to .87 for the PCL-R, and from .86 to .94 for the PCL-R 2nd Edition. The mean standard error of measurement for both the PCL-R and PCL-R 2nd Edition was 3.0 for a single rating and 2.0 for the average of two ratings. The concurrent and predictive validity of the PCL-R have also been repeatedly demonstrated (e.g., Hare, Hart, & Harpur, 1991; Harris, Rice, & Cormier, 1991; Rice, Harris, & Quinsey, 1990).

PCL-R ratings. The raters were two research staff, trained by an expert PCL-R rater and required to achieve an acceptable level of inter-rater reliability. Unfortunately, the inter-rater reliability coefficients were not available and so were not reported in this study. An average of the two ratings was used. The PCL-R ratings were based primarily on file information. Wong (1988) demonstrated that in the absence of a clinical interview, a rating can still be obtained reliably based solely on file information. The PCL-R scoring is based on structured criteria (Hare, 1991). A total score for all 20 items and scores for each factor were calculated. Scores on the eight items that load on Factor 1 and scores on the nine items that load on Factor 2 were summed separately to obtain corresponding factor scores.

3.2.3.3 The Violence Risk Scale

The *Violence Risk Scale* (VRS; Wong & Gordon, 2006; see Appendix O for a score sheet) is a specialized risk assessment instrument, designed to specifically assess violent recidivism. It consists of 6 static and 20 dynamic factors that have been found to predict violent recidivism. Each item on the VRS is rated on a 4-point scale, from 0 (the item is not associated with the individual's violent offending) to 3 (the item is very much associated with the individual's violent offending). Out of a possible total score of 78, scores of 30 and below are considered *low-risk*, scores from 31 to 45 are considered *medium-risk*, and scores over 45 are considered *high-risk*.

Unique to the VRS relative to other risk assessment instruments is its utilization of the Stages of Change Model or the Transtheoretical Stages of Change (Prochaska & DiClemente, 1986; Prochaska, DiClemente, & Norcross, 1992) to measure change in risk of violent recidivism from pre- to post-treatment. Offenders can be in any one of the following stages of change with regard to their violent offending: Precontemplation, Contemplation, Action, or Maintenance. In addition to pre- and post-treatment scores, *change* scores can be also obtained. Change scores give an indication of the reduction in risk of violent recidivism from pre- to post-treatment.

Reliability and validity of the VRS. Although the VRS is a relatively newer risk assessment instrument, research on its psychometric properties has been impressive thus far. Inter-rater reliability coefficients ranged from .86 (Wong & Gordon, 2006) to .91 (K. Wong, 2000). More recent inter-rater reliability coefficients ranged from .72 to .95 for scores, and from .82 to .99 for change scores (Burt 2003). Also, change in level of

risk of violent recidivism has been consistently captured by the VRS (e.g., Burt, 2000), with alpha coefficients ranging from .80 to .94 (Wong & Gordon, 2006).

The validity of the VRS in predicting violent recidivism in forensic populations has been demonstrated (Wong & Gordon, 2006). The correlation of scores with other risk assessment instruments range from .76 (PCL-R) to .82 (LSI-R). Pre- and post-treatment scores both correlated with violent recidivism before treatment, at .40 and .43, respectively. Post-treatment scores correlated with violent recidivism after treatment at .26.

VRS ratings. The VRS ratings were done also by the two highly trained research staff who did the PCL-R ratings. Inter-rater reliability coefficients for the VRS were also not available and so were not reported in this study. An average of the two ratings was used. The ratings were based primarily on information contained in each offender's file. At the time of rating, the VRS consisted of only 19 instead of 20 Dynamic variables, thus the prorating scheme recommended by the authors of the VRS was used to convert old scores to scores reflecting the scoring system of the new version. For each offender, a total score, post-treatment total score, and change score were calculated.

3.2.3.4 Other procedures

The PCL-R contains criminal history items, which likely inflate the correlation between the PCL-R and the criminal history-based CCP. To evaluate the correlation of the PCL-R with the CCP angle independent of the contribution of criminal history, PCL-R items that reflected criminal history (i.e. Antisocial facet items: Poor Behavioral Controls, Early Behavioral Problems, Juvenile Delinquency, Revocation of Conditional

Release, and Criminal Versatility) were simply removed. Total scores were recalculated and correlated with CCP angles. In fact, the correlation improved from $r = .303$ ($p = .07$) to $r = .328$ ($p = .05$).

The sample in Study 1 and subsequent studies were described with regard to a number of criminological variables. Just as the calculation of the CCP of the present sample included only convictions and releases pre-RPC admission to exclude potential effects of treatment on the CCP, so was the calculation of criminological variables. There are special cases (e.g., pre-post-treatment comparisons and examining the effect of age on criminal careers), however, when the calculation of the CCP and criminological variables involves more than the pre-treatment phase, if any.

Age at first conviction (AFC), age at first violent conviction (AFVC), and age at first nonviolent conviction (AFNVC) were obtained by subtracting the date of birth from the date of first conviction, date of first violent conviction, and date of first nonviolent conviction, respectively. The # of Violent Convictions was the total of all convictions for violent offenses, # of Nonviolent Convictions is the total of all convictions for nonviolent offenses, and # Total Convictions is the sum of both # of Violent Convictions and # of Nonviolent Convictions. The # Time In is the number of times an offender has been incarcerated and # Time + Out is the sum of all incarcerations and releases. Length of Time In (years) is the cumulative sentence length and Length of Time Out (years) is the cumulative time spent in the community. Career length (years) is the sum of Length of Time In and Length of Time Out.

The presence or absence of violent recidivism after treatment was ascertained through the CPIC and OMS (see Section 2.4.1 and Appendix C). Data were analyzed

using the Statistical Package for the Social Sciences (SPSS; SPSS Inc., 2001). The subsequent studies also used the same statistical package. This Program of Research followed the guidelines set forth in the *Canadian Code of Ethics for Psychologists – Third Edition* (Canadian Psychological Association, 2000). Finally, it has been approved by both the University of Saskatchewan Behavioral Research Ethics Board and the Regional Psychiatric Centre Prairies Research Review Committee.

3.3 Results

3.3.1 Description of the Sample

Table 3.1 contains the means and standard deviations of the total sample for the CCP angle and a number of criminological variables. Overall, the mean CCP angle of the 36 offenders was 35.76° (*SD* = 16.60°). They were between 17 and 18 years old at the time of their first conviction, with a mean 3.31-year gap between the times when they received their first nonviolent conviction and first violent conviction. On average, they received more nonviolent than violent convictions. The ratio of the number of violent to nonviolent convictions indicated that they were convicted of almost half as many violent as nonviolent offenses. In general, the offenders in this sample received a violent conviction per year of living in the community since their age at first conviction.

They were in and out of jail numerous times and spent almost equal amounts of time in prison and in the community since the onset of their criminal careers. The total amount of time that they were in and out of jail spanned a career length of 14.81 years. Therefore, this sample consisted of high-risk offenders who have demonstrated a clear

pattern of serious criminal activity starting at a very early age and who have no less than three convictions since the initiation of their criminal careers. It was for these reasons that this sample was chosen to test the hypotheses of Study 1.

Table 3.1

The CCP Angle and Criminological Variable Means and Standard Deviations of 36 Offenders

	M	*SD*	*Minimum*	*Maximum*
CCP Angle	35.76	16.60	10.98	67.30
Age at First Conviction (AFC)	17.47	1.78	14.50	21.98
Age at First Violent Conviction (AFVC)	21.32	5.07	14.83	36.67
Age at First Nonviolent Conviction (AFNVC)	18.01	2.24	14.50	24.74
# Time In	8.31	6.53	3	31
# Time In + Out	15.61	13.01	5	61
Length Time In	7.64	3.40	1.72	14.63
Length Time Out	7.17	3.94	1.72	19.94
Career Length	14.81	5.78	4.81	30.25
# Convictions	24.36	14.58	5	65
# Violent Convictions	5.81	4.02	1	22
# Nonviolent Convictions	18.56	12.73	3	50
# Violent / # Nonviolent Ratio	0.47	0.38	0.06	1.38
Density = # Violent Convictions / Length Time Out	0.95	0.63	0.18	2.50
Density = # Total Convictions / Length Time Out	3.82	2.09	0.77	9.30

Note: Age demographics, Time In, Time Out, and Career Length are in years.

3.3.2 The CCP Angle of Psychopaths vs. Nonpsychopaths

The first hypothesis was that the CCP can capture criminal career differences between psychopaths and nonpsychopaths. Table 3.2 contains the comparisons between the two groups for the CCP angle, several criminological variables, the PCL-R, and the VRS. The mean PCL-R score of psychopaths was 13 points higher than that of

nonpsychopaths. A *t*-test comparing the mean CCP angles of both groups revealed a significant difference between them, $t(34), = 2.55$, $p = .016$. The CCP angle of the psychopaths ($M = 42.31°$, $SD = 18.06°$) was significantly larger than that of the nonpsychopaths ($M = 29.21°$, $SD = 12.26°$). The psychopaths' CCP regression line was significantly steeper compared to that of the nonpsychopaths (see Figure 3.1). In fact, the effect size (*d*), a measure of the size of the observed effect, was .8, which is considered large (Cohen, 1988; Howell, 1997). Therefore, Hypothesis 1 was supported by the results of Study 1.

Although trends were observed, the psychopaths and nonpsychopaths did not differ significantly on any of the criminological variables. Sequential regression analysis revealed that the addition of criminological variables to the CCP angle did not significantly improve the prediction of psychopath/nonpsychopath in the present sample of offenders, $F_{change}(8, 26) = 0.57$, $p = .797$, and actually reduced R^2_{adj} by .10. Significant independent contribution to the prediction of psychopath/nonpsychopath by criminological variables was not found.

With regard to the VRS, the psychopaths had significantly higher scores than nonpsychopaths on Dynamic and Total scores only, although the difference in their Static scores probably would have reached significance given a larger sample size. This finding indicates that psychopaths, compared to nonpsychopaths, appear to be at a higher risk of future violent recidivism.

Table 3.2

The CCP Angle, Criminological Variable, PCL-R, and VRS Means and Standard Deviations of Psychopaths vs. Nonpsychopaths (N = 36)

	Psychopaths (n = 18)		Nonpsychopaths (n = 18)			
	M	*SD*	*M*	*SD*	*t*	*p*
CCP Angle	42.31	18.06	29.21	12.26	2.55	**.016**
AFC	17.28	2.01	17.68	1.56	0.69	.501
AFVC	20.68	5.17	21.96	5.03	0.75	.456
AFNVC	18.11	2.75	17.90	1.65	0.28	.783
# Time In	8.94	6.52	7.67	6.67	0.58	.565
# Time In + Out	16.89	13.04	14.33	13.34	0.58	.565
Length Time In	8.31	3.39	6.98	3.37	1.18	.247
Length Time Out	6.76	3.74	7.58	4.20	0.62	.541
Career Length	15.07	5.04	14.56	6.58	0.26	.797
# Convictions	27.78	14.04	20.94	14.70	1.43	.163
# Violent Convictions	6.61	4.79	5.00	3.00	1.21	.235
# Nonviolent Convictions	21.17	10.93	15.94	14.14	1.24	.223
Violent/Nonviolent Ratio	0.39	0.28	.55	0.45	1.25	.222
Density = # Violent Convictions / Length Time Out	1.14	0.67	0.77	0.53	1.83	.077
Density = # Total Convictions / Length Time Out	4.77	2.21	2.87	1.48	3.02	**.005**
PCL-R Factor 1	9.33	3.03	4.50	2.71	5.05	**.000**
PCL-R Factor 2	13.46	3.23	9.35	3.31	3.77	**.001**
PCL-R Total	26.38	5.91	16.55	6.30	4.83	**.000**
VRS Static	12.83	2.26	11.08	3.07	1.95	.059
VRS Dynamic	44.11	6.59	38.81	6.46	2.43	**.020**
VRS Total	56.93	7.89	49.78	8.00	2.70	**.011**

Note: Age demographics, Time In, Time Out, and Career Length are in years.

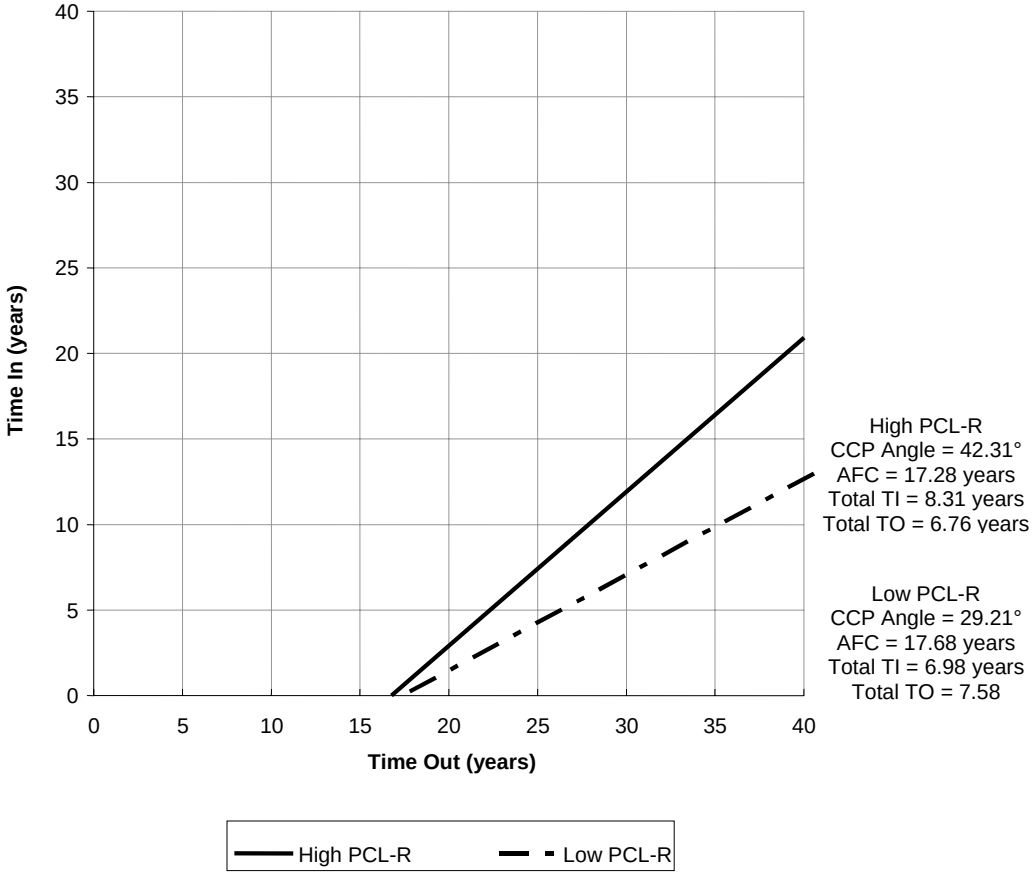

Figure 3.1. The Mean CCP Angles, AFC, and Total TI of High PCL-R (*n* = 18) vs. Low PCL-R (*n* = 18)

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

3.3.3 The CCP Angle of Recidivists vs. Nonrecidivists

The second hypothesis was that the CCP angle can represent the criminal career severity of those psychopaths and nonpsychopaths that recidivated (*recidivists*) and did not recidivate (*nonrecidivists*) with a violent offense after a 2½-year follow-up. Table 3.3 contains the means and standard deviations of both groups for the CCP angle, criminological variables, the PCL-R, and the VRS before treatment. As predicted, the

mean CCP angle of the recidivists (M = 41.46°, SD = 16.52) was significantly larger than that of the nonrecidivists (M = 29.39°, SD = 14.64), $t(34) = 2.31$, $p = .027$. Before treatment, the CCP regression line of the recidivists looked steeper than that of the nonrecidivists (Figure 3.2). The effect size (d) was .8, which is considered large (Cohen, 1988; Howell, 1997). Therefore, Hypothesis 2 was also supported by the results of Study 1.

Other than on age at first nonviolent conviction and ratio of violent to nonviolent convictions, the recidivists and nonrecidivists did not differ significantly on any of the criminological variables. Sequential regression analysis showed that the addition of criminological variables to the CCP angle did not significantly improve the prediction of yes/no violent recidivism, $F_{change}(8, 26) = 1.05$, $p = .426$, and increased R^2_{adj} by only .01. Significant independent contribution to the prediction of yes/no violent recidivism by criminological variables was not found.

Table 3.3

The CCP Angle, Criminological Variable, PCL-R, and VRS Means and Standard Deviations of Recidivists vs. Nonrecidivists (N = 36)

	Recidivists (n = 19)		Nonrecidivists (n = 17)			
	M	*SD*	*M*	*SD*	*t*	*p*
CCP Angle	41.46	16.52	29.39	14.64	2.31	**.027**
AFC	17.17	1.94	17.82	1.57	1.09	.281
AFVC	21.28	5.18	21.36	5.10	.05	.962
AFNVC	17.32	1.87	18.78	2.42	2.04	**.049**
# Time In	7.58	5.60	9.12	7.53	.70	.488
# Time In + Out	14.16	11.20	17.24	15.07	.70	.488
Length Time In	7.89	3.29	7.37	3.59	.46	.651
Length Time Out	6.23	3.89	8.22	3.84	1.55	.131
Career Length	14.12	5.20	15.59	6.44	.76	.453
# Convictions	25.89	11.90	22.65	17.31	.66	.513
# Violent Convictions	5.74	3.11	5.88	4.95	.11	.916
# Nonviolent Convictions	20.16	10.60	16.76	14.89	.79	.433
Violent/Nonviolent Ratio	0.35	0.24	0.60	0.46	2.09	**.044**
Density = # Violent Convictions / Length Time Out	1.19	0.67	0.77	0.53	1.73	.092
Density = # Total Convictions / Length Time Out	4.73	2.05	2.80	1.65	3.08	**.004**
PCL-R Factor 1	7.74	3.53	6.00	3.87	2.07	**.046**
PCL-R Factor 2	12.44	3.37	10.25	4.09	2.57	**.015**
PCL-R Total	23.85	7.52	18.81	7.47	2.89	**.007**
VRS Static	12.21	2.62	11.67	3.05	.57	.571
VRS Dynamic	43.55	6.91	39.13	6.45	1.98	.056
VRS Total	55.59	8.48	50.85	8.32	1.69	.100

Note: Recidivists and nonrecidivists were from the psychopaths and nonpsychopaths sample. Age demographics, Time In, Time Out, and Career Length are in years.

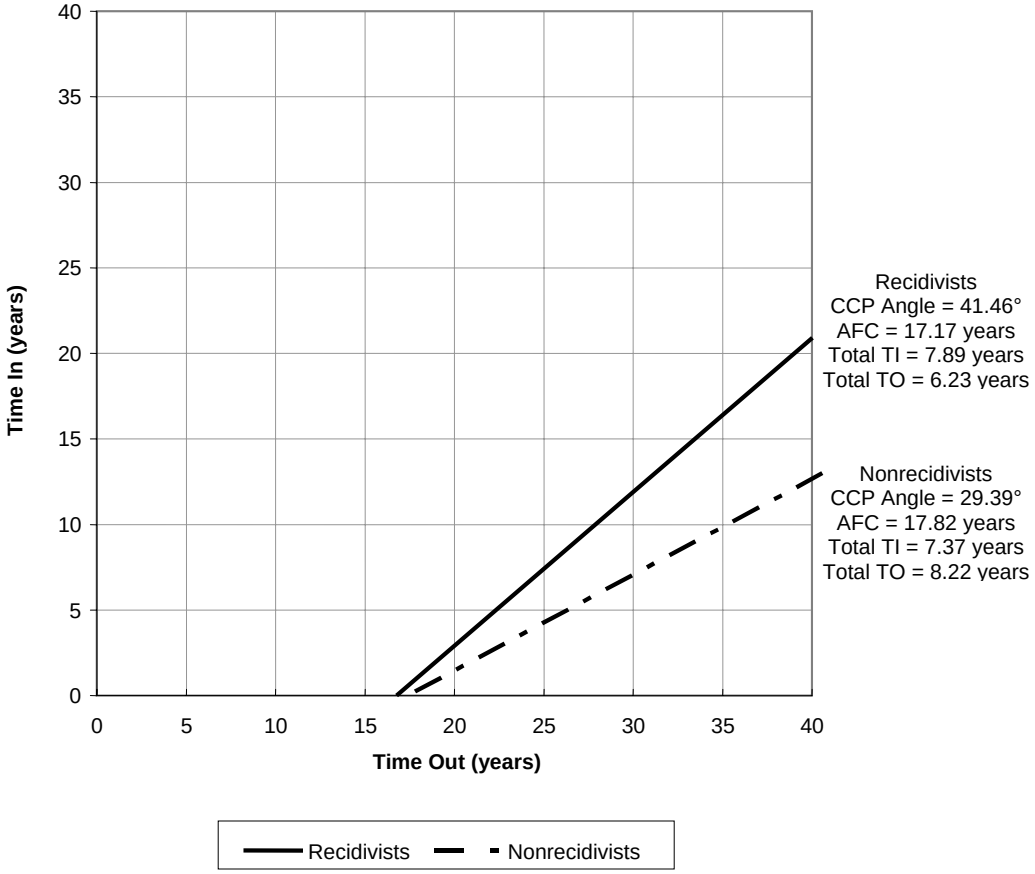

Figure 3.2. The Mean CCP Angles, AFC, and Total TI of Recidivists (*n* = 19) vs. Nonrecidivists (*n* = 17)

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

3.3.4 The Prediction of Future Violent and Nonviolent Recidivism

Although not specified a priori, further exploration of the data with regard to violent and nonviolent recidivism after prison release was done. Four predictor variables were chosen: CCP Angle, the age at first conviction (AFC), PCL-R, and VRS. Only data before release from prison following admission to the RPC were considered in coding

and rating for all of the predictor variables. Follow-up time was 2½ years. The outcome variables were violent and nonviolent recidivism.

First, the correlation of the predictors with the outcome was examined (see Table 3.4). Age at first conviction did not correlate significantly with violent or nonviolent recidivism. The CCP angle was significantly correlated with violent recidivism but not with nonviolent recidivism. In contrast, the PCL-R and VRS were significantly correlated with nonviolent recidivism but not with violent recidivism.

Table 3.4

The Correlation of the AFC, CCP Angle, PCL-R, and VRS with Violent and with Nonviolent Recidivism after a 2 ½-year Follow-Up (N = 36)

	Violent Recidivism		Nonviolent Recidivism	
	r	*p*	*r*	*p*
AFC	-.18	.281	-.12	.471
CCP Angle	.37	**.027**	.13	.458
PCL-R Total	.33	.052	.48	**.003**
PCL-R Factor 1	.24	.168	.48	**.003**
PCL-R Factor 2	.29	.088	.43	**.009**
VRS Total	.28	.100	.38	**.023**
VRS Static	.10	.571	.27	.110
VRS Dynamic	.32	.056	.37	**.025**

Second, the variables were screened for multicollinearity (i.e. a statistical condition whereby predictor variables are highly correlated with each other because they contain redundant information and, consequently, are not all needed in the same analysis). As shown in Table 3.5, the CCP angle did not correlate significantly with the AFC, PCL-R, and VRS. The correlation of the CCP angle with the PCL-R Total score approached significance once items in the PCL-R that reflected criminal history (i.e. Antisocial facet) were removed (see Section 3.2.3.4). The correlation of the CCP angle with the VRS was not significant most likely because of the range restriction of the VRS scores in Study 1. As had been indicated, the majority of VRS scores were in the high-risk range. The AFC was significantly correlated with both the PCL-R and VRS, and the PCL-R and VRS were significantly correlated with each other. However, none of the significant correlation coefficients exceeded .90 (see Table 3.5), which was the cut-off recommended by Tabachnick and Fidell (2001) for multicollinearity, and so were considered safe from multicollinearity.

Table 3.5

The Correlation among the CCP Angle, AFC, PCL-R, and VRS (N = 36)

	CCP Angle	AFC	PCL-R	VRS
CCP Angle	___	___	___	___
AFC	-.06 (.397)	___	___	___
PCL-R Total	.30 (.072)	-.44 (.007)	___	___
(w/o Items 10, 12, 18, 19, 20)	.33 (.051)			
Factor 1	.27 (.115)			
Factor 2	.20 (.241)			
VRS Total	.16 (.342)	-.49 (.002)	.82 (000)	___
VRS Static	.06 (.722)			
VRS Dynamic	.18 (.288)			

Note: Significance levels are in parentheses.

Third, the CCP Angle, AFC, PCL-R total score, and VRS total score were subjected to sequential regression analysis. The addition of AFC, PCL-R, and VRS to the CCP angle did not significantly improve the prediction of yes/no violent recidivism, $F_{change}(3, 31) = 0.84$, $p < .483$, and reduced R^2_{adj} by .01. However, the reverse was true for the prediction of yes/no nonviolent recidivism, $F_{change}(3, 31) = 5.01$, $p < .006$, with an R^2_{adj} increase of .30 occurring with the addition of AFC, PCL-R, and VRS to the CCP angle.

Further analysis using logistic regression was done for yes/no violent recidivism. Two types of logistic regression were used to analyze the data. Direct logistic regression using the enter method allows for all predictors to enter the equation simultaneously and for the evaluation of the contribution made by each predictor over and above that of the other predictors. In other words, each predictor is evaluated as if it entered the equation

last. On the other hand, stepwise logistic regression using backward deletion allows for the entry of the predictors to be specified based on statistical criterion, such as their correlation with the outcome (see Table 3.6), and eliminates those predictors that do not provide additional prediction to the predictors already in the equation.

The logistic model containing only the constant showed 53% overall correct classification. However, the test of the full model containing all predictors using direct logistic regression showed that it was not significantly different from the constant-only model. The full model did account for 26% of the variance in the outcome and correctly classified more cases than the constant-only model. None of the predictor variables significantly contributed, on its own, to the full model; however, the independent contribution of the CCP approached significance.

Direct logistic regression was also used to test reduced models with one or two predictors removed from the equation. The significance level of any reduced model improved so long as one of the predictors was the CCP. Note that the CCP was the only predictor which was significantly correlated with violent recidivism. Conversely, the significance level of any reduced model became worse if the CCP was removed from the equation. The variance in violent recidivism accounted for by any three- or two-predictor model containing the CCP closely approximated that of the full model. The combination of the CCP, AFC, and VRS produced the highest percentage of correct overall classification among the three-predictor models, whereas the combination of the CCP and AFC produced the highest percentage of correct overall classification among the two-predictor models.

The stepwise logistic regression analysis using backward deletion to assess the contributions of the CCP, AFC, PCL-R, and VRS to the prediction of violent recidivism deleted all but the CCP. This finding suggests that the CCP was the best predictor of violent recidivism among the 36 offenders in Study 1. The final model containing only the CCP was significantly different from the constant-only model. Compared to the variance (26%) accounted for by the full model with all predictors, the CCP-only model was able to account for 18% of the variance in violent recidivism. The overall correct classification of the full model (63.9%) did not appear to be a significant improvement to that of the CCP-only model (61.1%).

Table 3.6

Results of Logistic Regression Analyses for Future Violent Recidivism (N = 36)

	Model			Individual Predictors		
	$\chi^2(p)$	R^2	% Correct Classify	Wald(p)	β	e^{β}
CCP	7.87 (.097)	.26	63.9	3.38 (.066)	0.048	1.049
AFC				0.38 (.538)	-0.149	0.862
PCL-R				0.20 (.651)	0.039	1.040
VRS				0.05 (.816)	0.019	1.019
AFC	4.09 (.252)	.14	61.1	0.07 (.788)	-0.010	0.994
PCL-R				1.06 (.302)	0.083	1.086
VRS				0.00 (.951)	0.005	1.005
CCP	7.49 (.058)	.25	63.9	3.15 (.076)	0.045	1.046
PCL-R				0.26 (.612)	0.043	1.044
VRS				0.18 (.669)	0.033	1.034
CCP	7.66 (.054)	.26	69.4	3.99 (.046)	0.051	1.052
AFC				0.43 (.510)	-0.158	0.854
VRS				0.73 (.394)	0.046	1.047
CCP	7.81 (.050)	.26	66.7	3.31 (.069)	0.048	1.049
AFC				0.51 (.477)	-0.164	0.849
PCL-R				0.89 (.344)	0.544	1.056
CCP	6.90 (.032)	.23	72.2	4.71 (.030)	0.054	1.056
AFC				1.172 (.019)	-0.269	0.764

CCP	7.30 (.026)	.25	66.7	2.30 (.083)	0.043	1.044
PCL-R				2.06 (.151)	0.073	1.076
CCP	7.23 (.027)	.24	69.4	3.78 (.052)	0.048	1.049
VRS				1.91 (.167)	0.065	1.067
PCL-R	4.01 (.134)	.14	58.3	1.10 (.295)	0.083	1.087
VRS				0.02 (.893)	0.010	1.010
CCP	5.14 (.023)	.18	61.1	4.38 (.036)	0.050	1.051

Note: The base rate for violent recidivism was 19/36 = 53%.

3.4 Discussion

3.4.1 The CCP Angle of Psychopaths vs. Nonpsychopaths

Psychopaths clearly had a more serious criminal career than nonpsychopaths, which is consistent with results from studies that have found psychopaths to be more serious criminals than nonpsychopaths (e.g., Grann et al., 1999; Hare, 1991; Hare et al., 1988; Hare et al., 1993; Harris et al., 1991; Hart & Hare, 1989; Hemphill et al., 1998; Serin, 2001; Wong, 1984). The utility of the CCP angle in measuring the criminal career severity of psychopaths and nonpsychopaths was demonstrated.

Criminal career severity could be inferred also from criminological variables but none of the criminological variables, on its own, was able to discriminate between psychopaths and nonpsychopaths. A number of trends in the predicted direction were observed but were not enough to reach significance. As such, criminological variables were not very useful in discriminating the two groups with regard to their level of

criminality. This finding raises doubt regarding which, if any, criminological variables can be used as an index of criminal career.

A number of the criminological variables examined in this study are essentially individual components of the CCP, for example, number and length of incarcerations and releases, age at first conviction, etc. As such, the CCP can be considered as an index derived from aggregating a number of criminological variables, analogous to deriving the total score of a test by aggregating individual item scores. The sum (CCP) seemed to perform (i.e. predict group membership) much better than any of the individual scores.

3.4.2 The CCP Angle of Recidivists vs. Nonrecidivists

Recidivists had a larger CCP angle pre-follow-up period than nonrecidivists. Also, given the considerable overlap between psychopathy and recidivism in this study, it was not surprising that the CCP angles of psychopaths and nonpsychopaths were comparable to those of recidivists and nonrecidivists, respectively. These findings are consistent with previous findings about psychopathy and recidivism (i.e. psychopaths tend to recidivate at a higher rate than nonpsychopaths). The utility of the CCP angle in measuring the criminal career severity of recidivists and nonrecidivists was also demonstrated. The results of Study 1 provided evidence of the CCP angle's criterion validity.

Other than age at first nonviolent conviction, criminological variables were not able to discriminate between recidivists and nonrecidivists. Trends in the predicted direction apriori were also observed. However, the CCP, an aggregate of a number of

criminological variables, showed the predicted group difference and so would be preferable for use in measuring the criminality of recidivists and nonrecidivists.

3.4.3 The Prediction of Recidivism

The CCP was a significant predictor of violent but not nonviolent recidivism for the sample of offenders in Study 1. Offenders who have a serious criminal career because they committed serious crimes are more likely to commit serious crimes in the future, which is consistent with research that CPIC data (i.e. criminal history) can differentiate violent recidivists from nonrecidivists (e.g., Firestone et al., 1999; Hanson & Bussiere, 1998; Prouxl et al., 1997). Although the variance in violent recidivism that the CCP accounted for was small, the results from the sequential and logistic regression analyses indicate that the CCP angle can be considered a predictor of violent recidivism independent of the PCL-R and VRS. Also, it can be used in conjunction with the PCL-R and VRS to enhance predictive accuracy.

3.4.4 Limitation

A possible criticism was the small sample, considered by Nicholaichuk and colleagues (2000) to be a "sample of convenience." A small sample may weaken statistical power and so significant differences between groups may not be sufficiently detected. Given that psychopathy and violent recidivism correlated well with criminal career severity, a small sample did not really pose such a great problem. To improve generalizability of results, however, a larger sample size is needed and a recommendation for future research. Other risk assessment tools, such as the PCL-R and

VRS, were not as definitive, in part because of lack of power. Also the VRS scores were affected by restriction of range because the majority of offenders' scores were in the high-risk range.

4. STUDY TWO: THE *CRIMINAL CAREER PROFILE* OF HIGH, MEDIUM, AND LOW RISK GROUPS ASSESSED BY THE PCL-R, VRS, AND VRS: SO

The objective of Study 2 was to further establish the CCP angle's criterion validity using offender groups with different risk of recidivism, as determined by the *Psychopathy Checklist – Revised* (PCL-R; Hare, 1991, 2003), *Violence Risk Scale* (VRS; Wong & Gordon, in 2006), *Violence Risk Scale: Sexual Offender Version* (VRS: SO; Wong, Olver, Nicholaichuk, & Gordon, 2002; Olver, 2003), and the courts. In other words, do CCP angles vary as a function of risk groups?

Contemporary assessment of risk of recidivism usually involves the use of empirically validated measures, such as the VRS and VRS: SO. The PCL-R, although originally designed to measure psychopathy as a personality construct, has also been used as a risk assessment tool because of its significant and consistent association with future violent and nonviolent recidivism (e.g., Harris, Rice, & Cormier, 1991; Quinsey, Rice, & Harris, 1995; Serin, 1996). As was shown in Study 1, psychopaths had a worse criminal career than nonpsychopaths.

These risk assessment instruments have shown that individuals with extensive and serious criminal activity often have a higher risk score or are classified into higher risk group. Offenders who obtained high, medium, and low scores on various measures of risk of future recidivism are predicted to have the same ranking in their CCP angles. Another way of determining risk of recidivism is to rely upon legal designations of dangerousness or risk to commit serious crimes. A *Dangerous Offender* (DO) designation is invoked if the offender has committed a number of "serious personal injury offense" (e.g., sexual assault, aggravated assault, or manslaughter; Correctional Service Canada [CSC], 2001), poses a high risk to commit another serious offense, and is not amenable to treatment (i.e. intervention is likely to be ineffective). By and large, DO are repeat offenders with very significant violent offense histories. As such, DO is predicted to have the most serious criminal career and the highest risk of recidivism among all offenders. (See Appendix P for more information about DO.)

4.1 Hypothesis

The mean CCP angles of high-, medium-, and low-risk offenders are significantly different from each other, with the high-risk offenders having the largest angle, followed by the medium-risk offenders, and then the low-risk offenders (Hypothesis 1). The Dangerous Offender group, prior to being designated as such, has the largest mean CCP angle among all offender groups (Hypothesis 2).

4.2 Method

4.2.1 Sample

All offenders in Study 2 were referred by their parent institution to the Regional Psychiatric Centre (RPC) Prairies and admitted for assessment, treatment, or both, between 1981 and 2003. The sample used in Study 2 came from a large group of offenders who had been selected for previous research conducted at the RPC and have existing PCL-R, VRS, or VRS: SO scores. Random sampling of offenders with existing risk scores (i.e. stratified random sampling) was done through SPSS Random Sample of Cases.

Four different groups of offenders (see Table 4.1) were examined: (i) 137 violent offenders (i.e. index offense was a violent, nonsexual offense) rated on the PCL-R and divided into high, medium, and low-psychopathy groups; (ii) 133 violent offenders (i.e. index offense was a violent, nonsexual offense) rated on the VRS and divided into high, medium, and low-risk groups; (iii) 148 sex offenders (i.e. index offense was a sexual offense) rated on the VRS: SO and divided into high, medium-high, medium-low, and low-risk groups; and (iv) 50 sex offenders who were legally designated as a Dangerous Offender. All offenders had a minimum of two incarcerations and two prison releases and so met the inclusion criteria of the CCP. Only pre-RPC admission convictions and releases were used to calculate CCP angles in order to exclude possible confounding effects of treatment. In the case of DO, only pre-DO designation criminal history was used. Offense type (e.g., violent nonsexual, sexual, etc.) was determined by the *Criminal Code of Canada* (The Parliament of Canada, 2001).

Table 4.1

The Sample for Study 2 as a Function of Risk (N = 420)

	Total	High	Medium	Low
PCL-R	137	42 (30.7%)	47 (34.3%)	48 (35.0%)
VRS[†]	133	48 (36.1%)	41 (30.8%)	44 (33.1%)
VRS: SO	148	28 (18.9%)	(Med-High) 57 (38.5%) / (Med-Low) 47 (31.8%)	16 (10.8%)
DO	50	___	___	___

[†]48/137 offenders from the PCL-R sample were included in the VRS sample.

The PCL-R sample consisted of 63 (46.0%) Caucasian, 69 (50.4%) Aboriginal, 4 (2.9%) Black, and 1 (0.7%) East Indian. The VRS sample consisted of 77 (57.9%) Caucasian, 49 (36.8%) Aboriginal, 4 (3.0%) Black, 2 (1.5%) Asian, and 1 (0.8%) East Indian. The VRS: SO and DO samples consisted of 110 (55.6%) Caucasian, 84 (42.4%) Aboriginal, 2 (1.0%) Black, and 2 (1.0%) Asian. The CCP angles of the two predominant ethnic groups – Caucasian and Aboriginal – in each of the PCL-R, $t(130) = 1.82$, $p = .071$, VRS, $t(124) = 0.33$, $p = .739$, and VRS: SO / DO sample, $t(192) = 1.26$, $p = .211$, were comparable. Information regarding criminal history is found in Tables 4.4, 4.7, and 4.10.

4.2.2 Setting

The Regional Psychiatric Centre (RPC) Prairies was described in Section 3.2.2.

4.2.3 Instruments and Procedures

The procedures for Study 2 closely followed those of Study 1. The risk groups were determined by cut-off scores on actuarial measures (i.e. PCL-R, VRS, and VRS: SO; see Sections 4.2.3.2 to 4.2.3.4) and legal designation of DO status. Except for the DO group, the sample had already been rated by two highly trained research staff on the above actuarial measures of risk of future offending, and all offenders including the DO, were selected through stratified random sampling using the SPSS Random Sample of Cases. Criminal career severity was measured by the CCP angle. Convictions and releases before treatment or before DO designation, excluding their index offense for which they received the designation, were used to compute CCP angles.

4.2.3.1 The Criminal Career Profile (CCP)

The CCP (described in detail in Section 2) was used to measure criminal career.

4.2.3.2 The Psychopathy Checklist – Revised (PCL-R)

Cut-off scores for the PCL-R (Hare, 1991; described in detail in Section 3.2.3.2) were used to determine *low* (PCL-R < 20), *medium* (20 ≤ PCL-R < 30), or *high* (PCL-R ≥ 30) risk groups in 137 violent offenders.

4.2.3.3 The Violence Risk Scale (VRS)

Cut-off scores for the VRS (Wong & Gordon, 2006; described in detail in Section 3.2.3.3) were used to determine *low* (VRS ≤ 30), *medium* (30 < VRS ≤ 45), or *high* (VRS > 45) risk groups in 133 violent offenders.

4.2.3.4 The Violence Risk Scale: Sexual Offender Version

The *Violence Risk Scale: Sexual Offender Version* (VRS: SO; Wong, Olver, Nicholaichuk, & Gordon, 2002; see Appendix Q for a score sheet) is conceptually similar to the VRS but designed to assess risk of sexual recidivism. Similar to the VRS, the VRS: SO consists of both static and dynamic variables. The VRS: SO consisted of the 10 static variables from the *Static 99* (Hanson & Thornton, 1999) and 19 dynamic variables that have been empirically demonstrated to predict risk of sexual re-offending. Modifications were done by Olver in 2003 and the new version, which was used in the present study, consisted of 8 static variables, 4 of which are similar to the *Static 99* variables, and 16 dynamic variables.

Similar to the VRS, each item on the VRS: SO is rated on a 4-point scale, from 0 (the item is not associated with the individual's offending) to 3 (the item is very much associated with the individual's offending). Instead of having three risk categories like the VRS, the VRS: SO has four: *high* (VRS: SO $\geq$ 35), *medium-high* (25 $\leq$ VRS: SO $<$ 35), *medium-low* (15 $\leq$ VRS: SO $<$ 25) and *low* (VRS: SO $<$ 15). The VRS: SO authors applied the four-tiered classification scheme of the *Static 99* to the dynamic variables of the VRS: SO and empirically derived the cut-off scores, with the goal of maximizing differences in sexual recidivism among the four risk categories. Similar to the VRS, the VRS: SO is a measure of change.

Reliability and validity of the VRS: SO. The VRS: SO, similar to the VRS, has very good psychometric properties (Olver, 2003). Inter-rater reliability coefficients were .72 for an exact match and .95 for an exact match or within a point. Ratings of change

were .82 for an exact match and .99 for an exact match or within a point. Internal consistency for dynamic items was .79. Static variables correlated with future sexual recidivism at .36, dynamic variables at .22, and the combined static and dynamic variables at .31. Post-treatment dynamic variables correlated with future sexual recidivism at .25 and the combined static and dynamic variables at .34.

VRS: SO ratings. The VRS: SO ratings were done by two trained research staff, both of whom were also trained on the VRS and PCL-R, and required to achieve an acceptable level of inter-rater reliability. Inter-rater reliability coefficients for the VRS: SO were not available and so were not reported in this study. The ratings were based primarily on information contained in each offender's file.

4.2.3.5 Other procedures

A one-way between-subjects (each of the risk levels) ANOVA was used to test the hypotheses of Study 2.

4.3 Results

4.3.1 The CCP Angle of PCL-R Psychopathy Groups

Table 4.2 contains the means and standard deviations for the CCP angle and PCL-R of 137 violent offenders. The mean CCP angle of the whole sample was 40.11°. There was about an 8-degree difference in mean CCP angles between adjacent PCL-R groups (see Figures 4.1 and 4.2). The high PCL-R group had the steepest CCP angle (M = 48.37°), followed by the medium (M = 40.41°) and low PCL-R group (M = 32.61°), with significant between-group differences, $F(2, 134) = 9.01$, $p < .001$, giving support to Hypothesis 1 of Study 2. The high PCL-R group had a significantly larger CCP angle than the low PCL-R group; no other specific mean comparisons were significant.

There were significant differences among the three PCL-R groups on Total, Factor 1, and Factor 2 scores (see Table 4.2). All pairwise comparisons of means were also significant. In addition, the PCL-R Total, Factor 1, and Factor 2 scores were significantly correlated with the CCP angle, as shown in Table 4.3. Pearson's r, a measure of effect size for continuous data, between CCP angle and PCL-R Total score was .32, which is considered medium (Cohen, 1988; Howell, 1997). Finally, PCL-R Total, Factor 1, and Factor 2 scores were significantly and strongly correlated with each other.

Table 4.2

The CCP Angle and PCL-R Means and Standard Deviations of 137 Offenders[†]

	Total Sample (N = 137)	High PCL-R (n = 42)	Medium PCL-R (n = 47)	Low PCL-R (n = 48)	F value
CCP Angle	40.11 (18.59)	48.37 (13.34)	40.41 (16.68)	32.61 (18.21)	**9.01*** **
PCL-R Total	23.72 (8.02)	31.92 (2.06)	26.21 (2.06)	14.10 (4.19)	**423.28 *** **
PCL-R F1	7.98 (4.24)	12.15 (2.15)	9.02 (2.12)	3.31 (2.16)	**199.37*** **
PCL-R F2	12.31 (3.63)	15.54 (1.51)	13.46 (1.86)	8.34 (2.43)	**159.40*** **

Note: Standard deviations are in parentheses.
[†]None has a sexual conviction.
***p < .001.

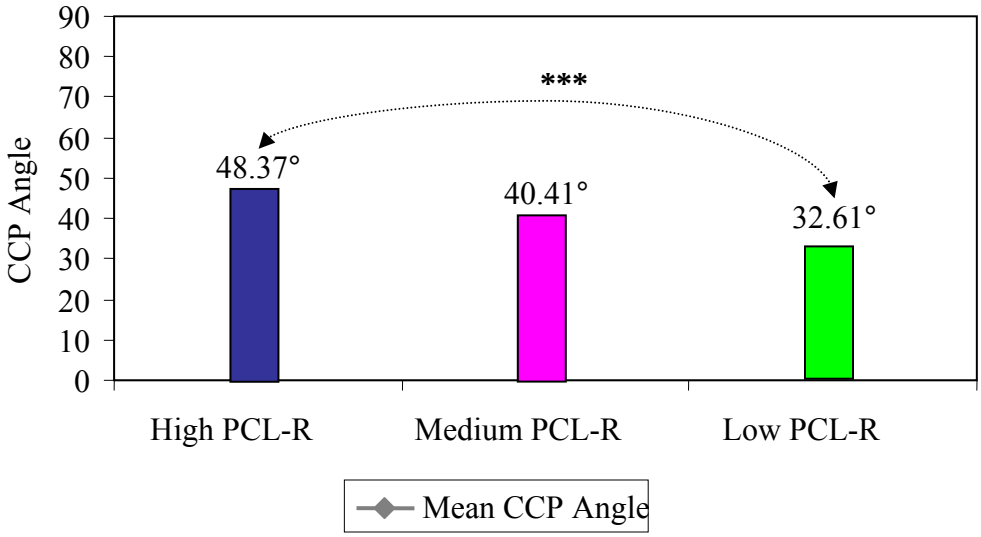

Figure 4.1: The mean CCP Angles of 137 offenders rated on the PCL-R as High (n = 42), Medium (n = 47), or Low (n = 48)

***p < .001.

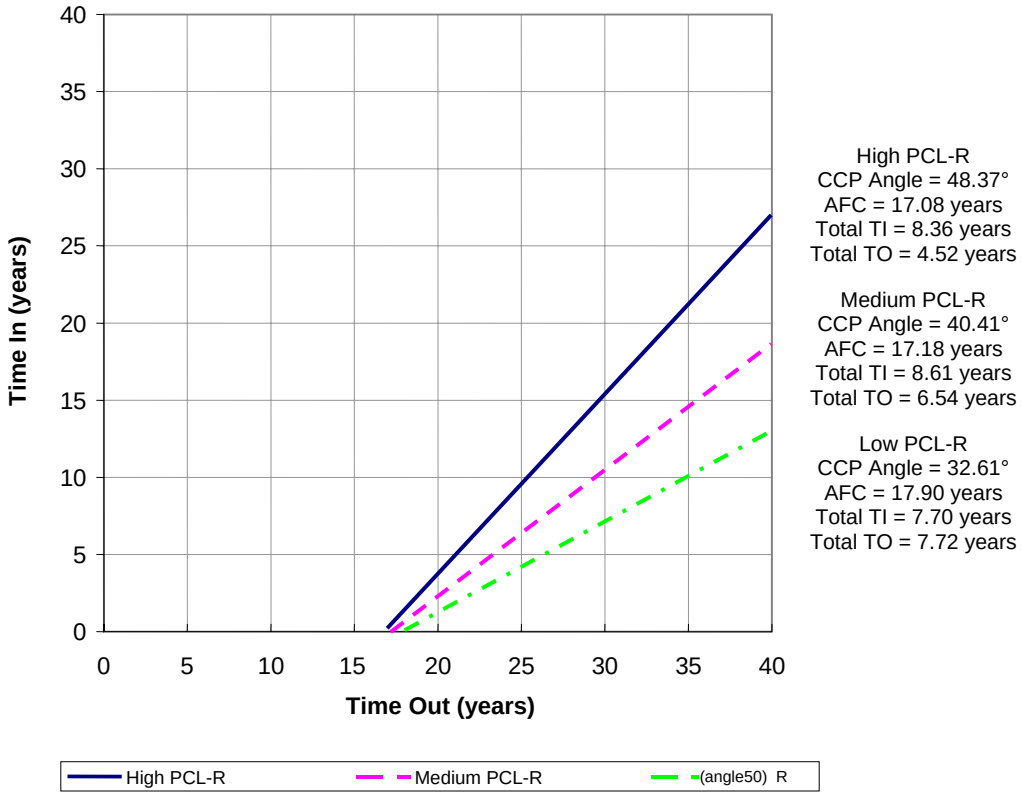

Figure 4.2: The mean CCP Angles, AFC, and Total TI of 137 offenders rated on the PCL-R as High (n = 42), Medium (n = 47), or Low (n = 48)

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

Table 4.3

The Correlation between the CCP Angle and PCL-R (N = 137) [†]

	CCP Angle	PCL-R Total	PCL-R F1	PCL-R F2
CCP Angle	___	___	___	___
PCL-R Total	**.32*** **	___	___	___
PCL-R F1	**.26** **	**.93*** **	___	___
PCL-R F2	**.35*** **	**.90*** **	**.71*** **	___

Note: Even when 5 criminal history variables from the PCL-R were removed from the Total score, the correlation between the CCP Angle and PCL-R remained significant ($r = .323$, $p < .001$).
[†]None has a sexual conviction.
***$p < .001$. **$p < .01$.

Table 4.4 contains a description of the total PCL-R sample with regard to a number of criminological variables. On average, there was almost a three-year delay between the age at first nonviolent conviction and the age at first violent conviction. They were convicted an average of about 23 times, receiving one violent conviction for every two nonviolent convictions. They were incarcerated an average of eight times since their first conviction, with a criminal career spanning a mean of almost 15 years, of which about 8 years were spent in prison and only a little over 6 years were spent out of prison.

With regard to group differences, a clear trend of criminal career severity appeared to exist between adjacent PCL-R groups (see Figures 4.1 and 4.2). Other than two significant group differences, there did not appear to be any consistent differences in criminological variable means among the three PCL-R groups. Significant group differences were found only for number of violent convictions and accumulated amount of time spent outside of prison. The high PCL-R group had the highest number of

violent convictions and spent the shortest amount of time outside of prison. More specifically, the high PCL-R group, compared to either the medium- or low-PCL-R group, received significantly more violent convictions and spent a significantly shorter length of time in the community. The ratio of violent to nonviolent convictions and the density of violent crimes were higher for the high than either the medium or low PCL-R group. Sequential regression analysis revealed that the addition of criminological variables to the CCP angle did not significantly improve the prediction of low/medium/high PCL-R in the present sample of offenders, $F_{change}(8, 126) = 1.86$, $p = .072$, with R^2_{adj} increasing by only .04. Significant independent contribution to the prediction of risk group by criminological variables was not found.

Table 4.4

The CCP Angle and Criminological Variable Means and Standard Deviations of 137Offenders rated on the PCL-R (High, Medium, or Low)

	Total Sample (N = 137)	High PCL-R (n = 42)	Medium PCL-R (n = 47)	Low PCL-R (n = 48)	F value
CCP Angle	40.11 (18.59)	48.37 (13.34)	40.41 (16.68)	32.61 (18.21)	**9.01*** **
AFC	17.40 (2.13)	17.08 (1.76)	17.18 (1.47)	17.90 (2.81)	2.21, *ns*
AFVC	20.31 (3.70)	19.58 (3.01)	20.17 (3.97)	21.06 (3.89)	1.82, *ns*
AFNVC	17.76 (2.70)	17.31 (2.32)	17.51 (1.98)	18.39 (3.44)	2.22, *ns*
# Time In	8.01 (5.30)	6.67 (3.11)	8.55 (6.00)	8.65 (5.93)	1.76, *ns*
# Time In + Out	15.01 (10.60)	12.33 (6.23)	16.11 (12.01)	16.29 (11.86)	1.76, *ns*
Length Time In	8.21 (4.17)	8.36 (3.83)	8.61 (4.17)	7.70 (4.47)	0.67, *ns*
Length Time Out	6.34 (3.79)	4.52 (2.63)	6.54 (3.41)	7.72 (4.38)	**8.41*** **
Career Length	14.55 (6.18)	12.88 (4.58)	15.15 (6.36)	15.42 (6.99)	1.84, *ns*
# Convictions	23.39 (14.43)	19.91 (10.64)	26.21 (16.36)	23.83 (14.89)	2.18, *ns*
# Violent Convictions	7.46 (6.94)	9.74 (8.81)	6.43 (7.27)	6.48 (3.63)	**3.85***
# Nonviolent Convictions	17.19 (13.73)	13.71 (10.86)	20.13 (14.88)	17.35 (14.38)	2.43, *ns*
# Violent / # Nonviolent Ratio	0.43	0.71	0.32	0.37	**9.07*** **
Density = # Violent Convictions / Length Time Out	1.77 (2.54)	3.35 (3.98)	1.09 (0.92)	1.05 (0.86)	**14.99*** **
Density = # Total Convictions / Length Time Out	4.72 (4.12)	5.59 (3.66)	4.49 (2.52)	4.18 (5.50)	0.88, *ns*

Note: Standard deviations are in parentheses. Age demographics, Time In, Time Out, and Career Length are in years.
***p < .001. *p < .05. *ns* = nonsignificant p value.

4.3.2 The CCP Angle of VRS Risk Groups

The means and standard deviations for the CCP angle and VRS ratings of 133 offenders are presented in Table 4.5. The mean CCP angle of the sample was 32.01°. There was a 22- and 12-degree difference between the high and medium VRS groups and between the medium and low VRS groups, respectively (see Figures 4.3 and 4.4). All pairwise comparisons of means were significant, with the high VRS group (M = 49.99°) having the largest CCP angle, followed by the medium (M = 28.17°) and low VRS group (M = 15.98°), which supported Hypothesis 1 of Study 2. For VRS Total, Static, and Dynamic scores, mean comparisons for the three VRS groups (high, medium, and low) were significant (see Table 4.5). The VRS, Static, and Dynamic scores were significantly correlated with the CCP angle (see Table 4.6). Pearson's r between CCP angle and VRS Total score was .69, which is considered large (Cohen, 1988; Howell, 1997).

Table 4.5

The CCP Angle and VRS Means and Standard Deviations of 133 Offenders[†]

	Total Sample (N = 133)	High VRS (n = 48)	Medium VRS (n = 41)	Low VRS (n = 44)	F value
CCP Angle	32.01 (22.91)	49.99 (22.48)	28.17 (16.82)	15.98 (12.53)	**42.63*** **
VRS Total	40.89 (16.10)	59.46 (7.10)	37.55 (4.40)	23.76 (5.23)	**449.92*** **
VRS Static	10.58 (3.79)	13.63 (2.41)	10.09 (3.10)	7.70 (3.13)	**49.29*** **
VRS Dynamic	30.34 (13.62)	45.89 (5.68)	27.46 (4.38)	16.06 (5.45)	**381.96*** **

Note: Standard deviations are in parentheses.
[†]Some overlap with the PCL-R sample. None has a sexual conviction.
***p < .001.

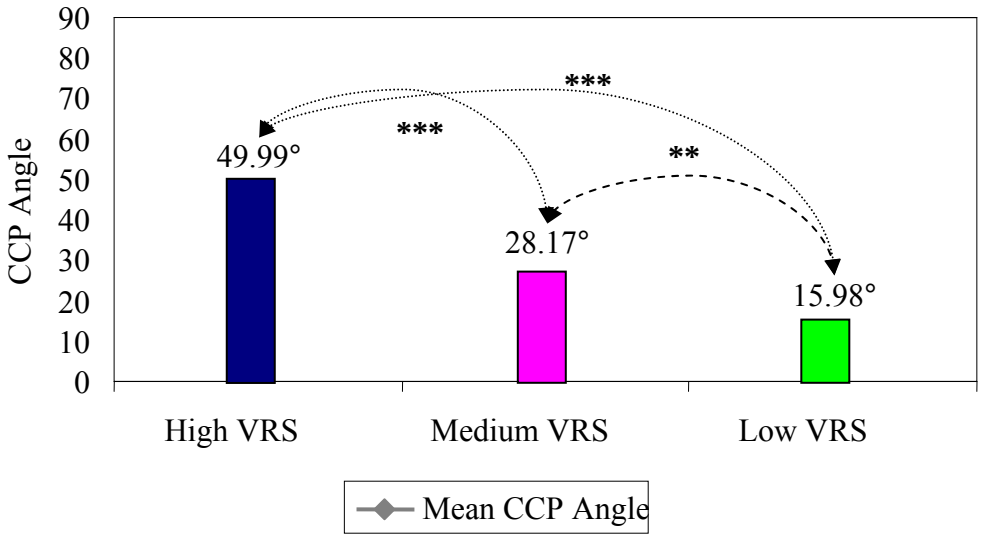

Figure 4.3: The mean CCP Angles of 133 offenders rated on the VRS as High (n = 48), Medium (n = 41), or Low (n = 44)

***p < .001. **p < .01.

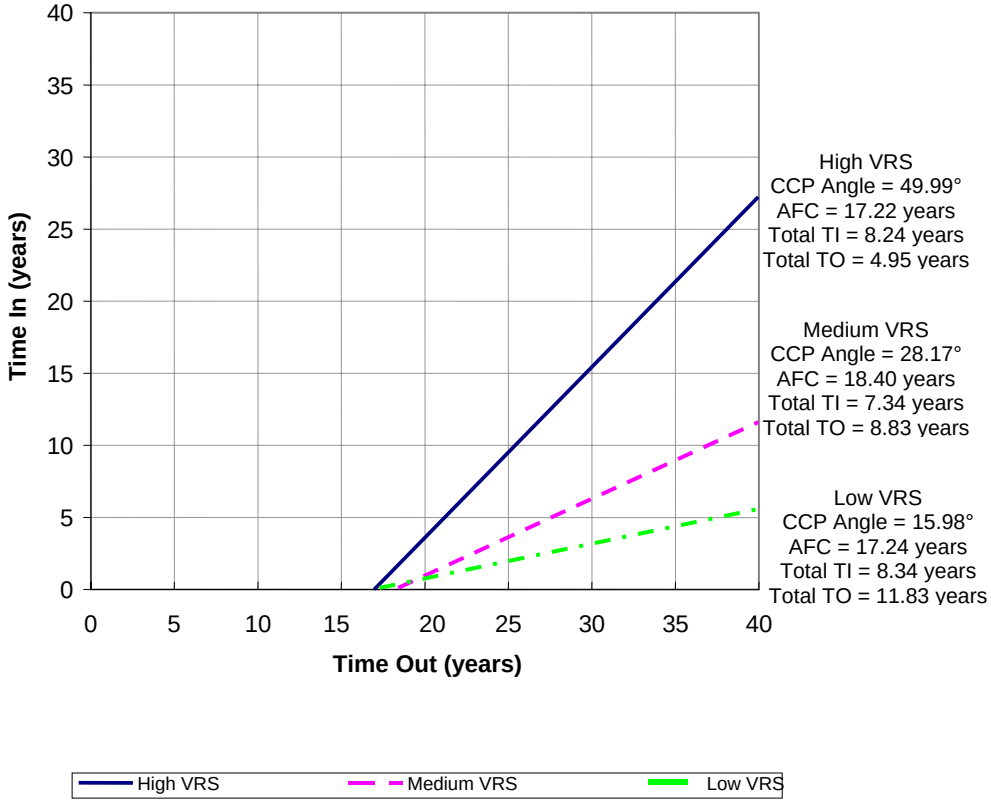

Figure 4.4: The mean CCP Angles, AFC, and Total TI of 133 offenders rated on the VRS as High (n = 48), Medium (n = 41), or Low (n = 44)

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

Table 4.6

The Correlation between the CCP Angle and VRS (N = 133) [†]

	CCP Angle	VRS Total	VRS Static	VRS Dynamic
CCP Angle	___	___	___	___
VRS Total	**.69*** **	___	___	___
VRS Static	**.59*** **	**.73*** **	___	___
VRS Dynamic	**.65*** **	**.98*** **	**.58*** **	___

[†]36% overlap with the PCL-R sample. None has a sexual conviction.
***$p < .001$.

The total VRS sample is described with regard to a number of criminological variables in Table 4.7. These offenders tended to commit a nonviolent offense before a violent crime, as indicated by an earlier age in years at first conviction for a nonviolent offense followed by a conviction for a violent offense three-and-a-half years later. They were convicted 22 times, for which 84% was accounted by nonviolent convictions and for which only 16% was accounted by violent convictions. Since their first conviction, they were incarcerated an average of almost eight times, spent about seven years in prison, and lived about eight and a half years in the community. The duration of their criminal career was a little over 15 years.

The VRS sample was examined by risk group with regard to a number of criminological variables (see Table 4.7). Significant group differences were found for age at first conviction, age at first violent conviction, age at first nonviolent conviction, number of violent convictions, length of total time spent in prison since age at first conviction, length of total time spent outside of prison since age at first conviction, career length, density of violent crimes (number of violent convictions over length of

total time spent outside of prison since age at first conviction) and total crimes (number of total convictions over length of total time spent outside of prison since age at first conviction). Sequential regression analysis revealed that the addition of criminological variables to the CCP angle significantly improved the prediction of low/medium/high VRS in the present sample of offenders, $F_{change}(9, 105) = 5.23$, $p < .001$, with R^2_{adj} increasing by .16. Significant independent contributions to the prediction of risk group by criminological variables were found for number of violent convictions and length of total incarceration.

Table 4.7

The CCP Angle and Criminological Variable Means and Standard Deviations of 133 Offenders[†] *rated on the VRS (High, Medium, or Low)*

	Total Sample (N = 133)	High VRS (n = 48)	Medium VRS (n = 41)	Low VRS (n = 44)	F value
CCP Angle	32.01 (22.91)	49.99 (22.48)	28.17 (16.82)	15.98 (12.53)	**42.63*** **
AFC	18.29 (3.46)	17.22 (1.96)	18.40 (3.14)	19.35 (4.57)	**5.83** **
AFVC	22.59 (5.88)	19.89 (3.73)	23.09 (6.09)	26.09 (6.41)	**13.16*** **
AFNVC	18.89 (4.72)	17.62 (2.34)	18.74 (4.18)	20.41 (6.49)	**5.88** **
# Time In	7.59 (5.02)	6.54 (4.81)	8.22 (5.55)	8.16 (4.62)	1.65, *ns*
# Time In + Out	14.19 (10.03)	12.08 (9.61)	15.44 (11.10)	15.32 (9.24)	1.65, *ns*
Length Time In	6.84 (4.03)	8.24 (3.90)	7.34 (4.25)	4.85 (3.18)	**6.08** **
Length Time Out	8.42 (6.22)	4.95 (3.61)	8.83 (5.38)	11.83 (7.19)	**18.64*** **
Career Length	15.26 (6.91)	13.19 (5.28)	16.17 (6.91)	16.68 (7.99)	**5.14** **
# Convictions	22.16 (13.97)	21.02 (11.84)	22.56 (14.49)	23.02 (15.76)	0.08, *ns*
# Violent Convictions	3.59 (3.21)	5.56 (3.70)	3.22 (2.42)	1.77 (1.84)	**12.26*** **
# Nonviolent Convictions	18.59 (13.44)	15.46 (9.62)	19.37 (14.25)	21.30 (15.67)	1.02, *ns*
# Violent / # Nonviolent Ratio	0.19	0.36	0.17	0.08	1.01, *ns*
Density = # Violent Convictions / Length Time Out	0.91 (1.44)	1.96 (1.95)	0.46 (0.42)	0.19 (0.25)	**20.93*** **
Density = # Total Convictions / Length Time Out	4.24 (4.26)	6.77 (5.73)	3.25 (2.34)	2.41 (1.75)	**15.40*** **

Note: Standard deviations are in parentheses. Age demographics, Time In, Time Out, and Career Length are in years.

[†]36%overlap with the PCL-R sample. None has a sexual conviction.

****p* < .001. ***p* < .01. *ns* = nonsignificant *p* value.

4.3.3 The CCP Angle of VRS: SO Risk Groups and Dangerous Offenders

Means and standard deviations are presented in Table 4.8 for the CCP angle and VRS: SO of 148 sex offenders. The mean CCP angle of 148 sex offenders rated on the VRS: SO was 27.47°. There was at least a 6-degree difference in mean CCP angles between adjacent VRS: SO groups, with the high VRS: SO group showing the largest mean CCP angle (M = 35.79°), followed by the medium-high (M = 29.96°), medium-low (M = 23.44°), and low VRS: SO group (M = 15.89°). See Figures 4.5 and 4.6.

Mean CCP angles varied significantly as a function of VRS: SO risk group, which supported Hypothesis 1 of Study 2. The high VRS: SO group had a significantly larger mean CCP angle than both the medium-low and low VRS: SO groups, and the medium-high VRS: SO group had a significantly larger mean CCP angle than the low VRS: SO group. The data clearly showed that larger CCP angles are associated with high risk.

With regard to the VRS: SO (see Table 4.8), significant mean differences for Total, Static, and Dynamic scores between adjacent VRS: SO groups existed. Table 4.9 contains the correlation and significance values for the CCP angle and the VRS: SO. Although the CCP angle was not significantly correlated with VRS: SO Dynamic Score, it was significantly correlated with both the VRS: SO Total and Static scores. Pearson's r between CCP angle and VRS: SO Total score was .26, which is considered medium (Cohen, 1988; Howell, 1997).The CCP angle, a putative measure of criminal career severity, increased, however, with VRS: SO groups and VRS: SO scores.

Table 4.8

The CCP Angle and VRS: SO Means and Standard Deviations of 148 Sex Offenders

	Total Sample (N = 148)	High VRS: SO (n = 28)	Medium-High VRS: SO (n = 57)	Medium-Low VRS: SO (n = 47)	Low VRS: SO (n = 16)	F value
CCP Angle	27.47 (19.64)	35.79 (20.15)	29.96 (20.45)	23.44 (17.40)	15.89 (14.51)	**4.85****
VRS: SO Total	37.43 (9.39)	51.15 (5.22)	40.41 (2.71)	30.50 (3.01)	23.14 (2.52)	**327.14*****
VRS: SO Static	12.43 (4.07)	16.93 (2.48)	13.58 (2.80)	9.87 (3.20)	8.00 (2.48)	**51.96*****
VRS: SO Dynamic	24.97 (6.88)	34.22 (4.93)	26.83 (3.02)	20.59 (3.47)	15.01 (3.17)	**130.39*****

Note: Standard deviations are in parentheses.
***p < .001. **p < .01.

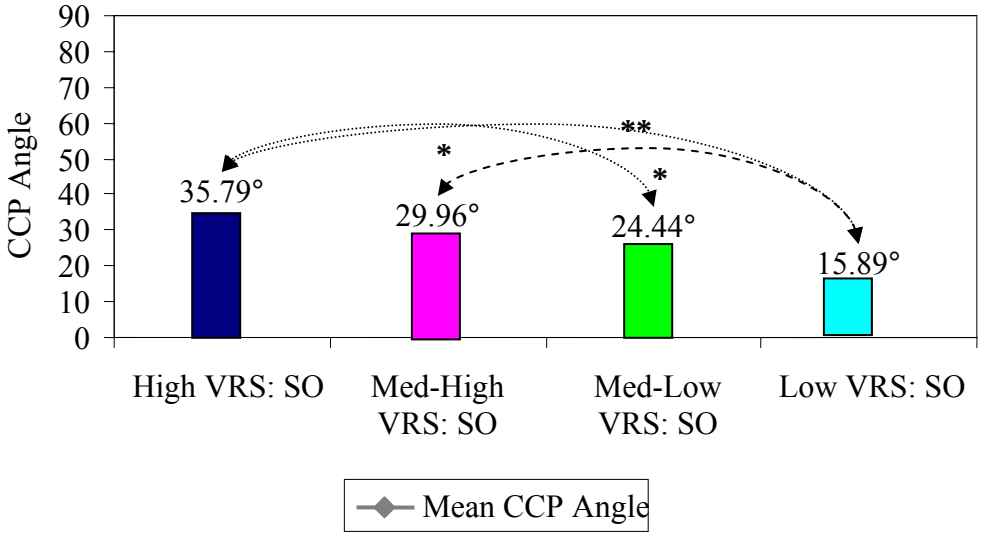

Figure 4.5: The Mean CCP Angles of 148 sex offenders rated on the VRS: SO as High (n = 28), Medium-High (n = 57), Medium-Low (n = 47), or Low (n = 16)

**$p < .01$. *$p < .05$.

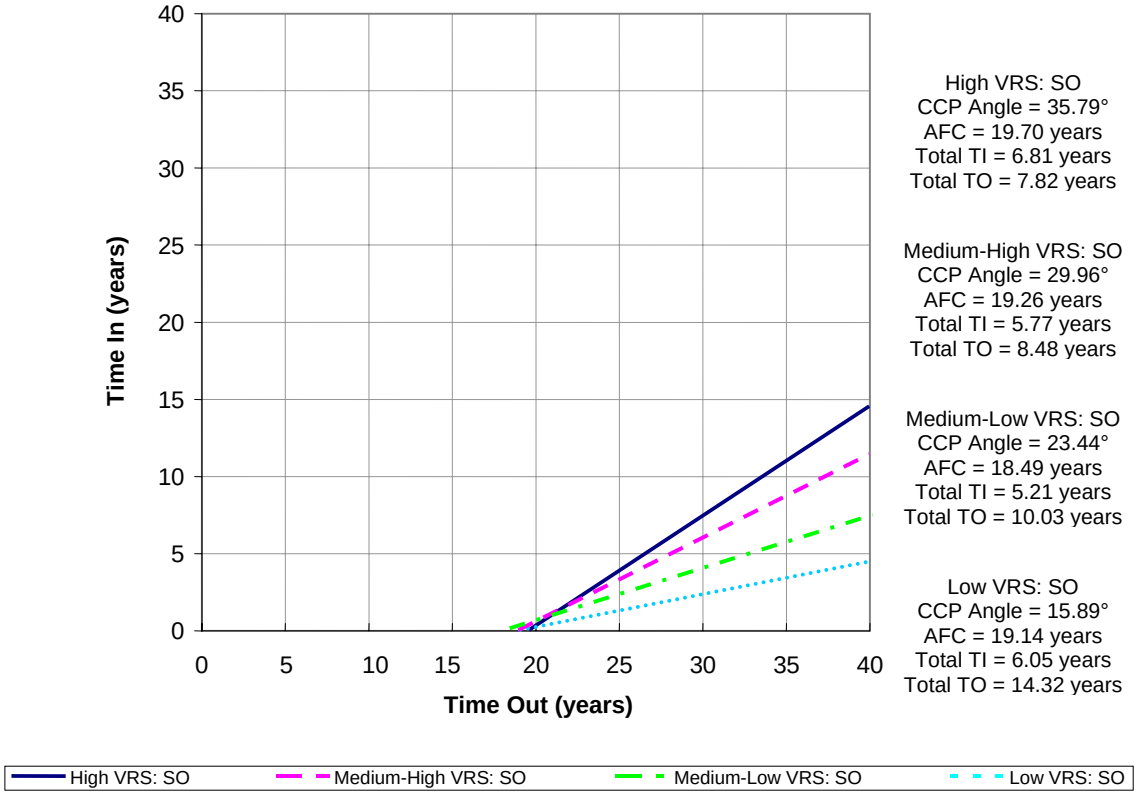

Figure 4.6: The Mean CCP Angles, AFC, and Total TI of 148 sex offenders rated on the VRS: SO as High ($n = 28$), Medium-High ($n = 57$), Medium-Low ($n = 47$), or Low ($n = 16$)

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

Table 4.9

The Correlation between the CCP Angle and VRS: SO (N = 148)

	CCP Angle	VRS: SO Total	VRS: SO Static	VRS: SO Dynamic
CCP Angle	___	___	___	___
VRS: SO Total	**.26*** **	___	___	___
VRS: SO Static	**.43*** **	**.76*** **	___	___
VRS: SO Dynamic	.11, *ns*	**.92*** **	**.447*** **	___

***$p < .001$. *ns* = nonsignificant *p* value.

Dangerous Offenders (DO) were not rated on the VRS: SO but were compared to the VRS: SO sample with regard to the CCP angle (see Hypothesis 2) and a number of criminological variables (see Table 4.10). The mean CCP angles of all sex offenders are presented in Figures 4.7 and 4.8. The mean CCP angle of the DO group was 40.20°, the highest among the sex offender groups. There was a main effect of group, which supported Hypothesis 2 of Study 2. The DO group had a significantly larger mean CCP angle than both the medium-low and low VRS: SO groups. There was a clear linear relationship between mean CCP angles and risk groups. The effect sizes (*d*) between DO and medium-low and low VRS: SO groups were .9 and 1.3, respectively, both of which are considered large (Cohen, 1988; Howell, 1997).

With regard to criminological variables, comparisons among the five groups (i.e. four VRS: SO and DO groups) yielded interesting results (see Table 4.10). Significant differences were found for age at first sexual conviction, accumulated length of time inside and outside of prison, number of total and sexual convictions, and number of sexual convictions over length of accumulated time spent outside of prison. The DO and

high VRS: SO groups were generally worse than the remaining VRS: SO groups on the criminological variables that showed significant group differences. Sequential regression analysis revealed that the addition of criminological variables to the CCP angle significantly improved the prediction of low/medium-low/medium-high/high VRS: SO in the present sample of offenders, $F_{change}(10, 184) = 2.61$, $p < .01$, with R^2_{adj} increasing by .06. Significant independent contribution to the prediction of risk group by criminological variables was found for number of sexual convictions.

Table 4.10

The CCP Angle and Criminological Variable Means and Standard Deviations of 148 Sex Offenders Rated on the VRS: SO and 50 Sex Offenders Prior to Being Designated a Dangerous Offender

	Low VRS: SO (n = 16)	Medium-Low VRS: SO (n = 47)	Medium-High VRS: SO (n = 57)	High VRS: SO (n = 28)	DO (N = 50)	F value
CCP Angle	15.89 (14.51)	23.44 (17.40)	29.96 (20.45)	35.79 (20.15)	40.20 (21.15)	**7.40*** **
AFC	19.14 (2.47)	18.49 (3.57)	19.26 (4.39)	19.70 (4.92)	19.28 (5.35)	0.38, *ns*
AFSC (Age at First Sexual Conviction)	31.20 (7.59)	28.46 (8.14)	24.11 (6.02)	23.47 (5.41)	26.65 (9.90)	**4.32****
AFVC	25.04 (8.66)	23.01 (6.30)	22.04 (5.39)	22.45 (5.38)	22.74 (8.10)	0.66, *ns*
AFNVC	20.64 (5.24)	18.93 (3.96)	20.32 (7.08)	20.47 (5.77)	20.23 (6.57)	0.51, *ns*
# Time In	5.88 (2.58)	5.91 (3.01)	5.82 (2.82)	6.89 (5.16)	7.14 (5.69)	1.28, *ns*
# Time In + Out	10.75 (5.16)	10.83 (6.01)	10.65 (5.65)	12.79 (10.32)	13.28 (11.38)	1.28, *ns*
Length Time In	6.05 (4.29)	5.21 (3.03)	5.77 (2.57)	6.81 (3.94)	7.73 (4.41)	**3.59****
Length Time Out	14.32 (6.97)	10.03 (8.49)	8.48 (6.77)	7.82 (5.24)	8.40 (7.51)	**2.81***
Career Length	20.37 (7.70)	15.24 (8.95)	14.25 (7.52)	14.63 (7.69)	16.13 (8.30)	2.34, *ns*
# Total Convictions	12.00 (6.57)	13.51 (7.68)	13.79 (7.55)	17.14 (12.14)	18.70 (16.55)	**2.85***
# Sexual Convictions	2.00 (1.21)	1.53 (0.80)	2.74 (2.18)	3.21 (2.04)	2.48 (1.74)	**5.30*** **
# Nonsexual Violent Convictions	2.13 (2.68)	2.72 (2.47)	2.70 (2.96)	3.00 (2.69)	5.00 (5.63)	**4.04****
# Nonsexual Nonviolent Convictions	7.88 (5.77)	9.26 (6.59)	8.35 (6.93)	10.93 (9.71)	11.22 (12.48)	1.31, *ns*
# Total Nonsexual Convictions	10.00 (7.03)	11.98 (7.71)	11.05 (8.11)	13.93 (11.83)	16.22 (17.04)	2.23, *ns*
Density = # Sexual	0.24	0.54	0.58	1.01	1.90	**2.52***

Convictions / Length Time Out	(0.43)	(0.81)	(0.81)	(2.52)	(7.11)	
Density = # Nonsexual Violent Convictions / Length Time Out	0.16 (0.08)	0.27 (0.26)	0.58 (0.77)	1.34 (2.90)	0.83 (1.50)	1.25, *ns*
Density = # Total Convictions / Length Time Out	1.37 (1.37)	2.41 (2.37)	2.85 (4.12)	4.12 (6.24)	4.87 (9.64)	1.97, *ns*

Note: Standard deviations are in parentheses. Age demographics, Time In, Time Out, and Career Length are in years.
***$p < .001$. **$p < .01$. *$p < .05$. *ns* = nonsignificant *p* value.

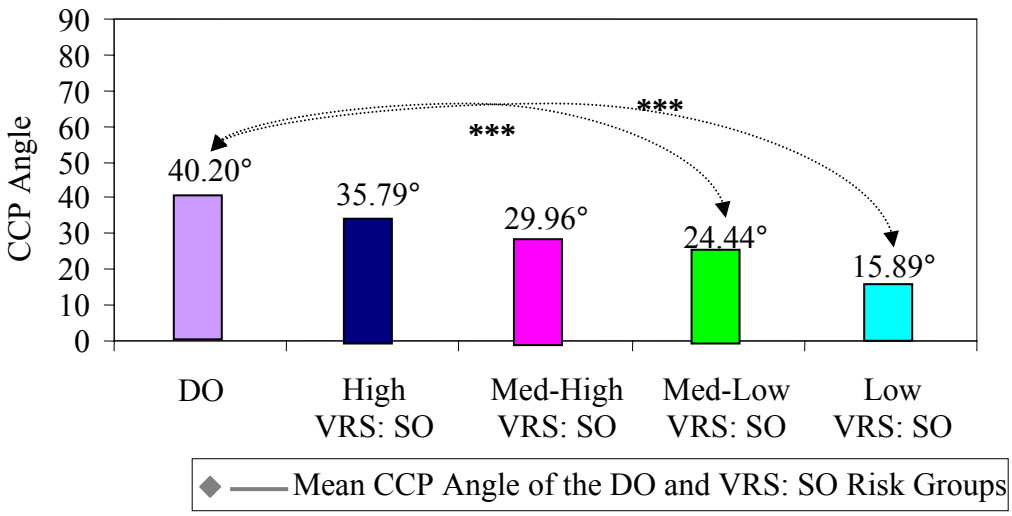

Figure 4.7: The mean CCP Angles of 148 sex offenders rated on the VRS: SO as High (*n* = 28), Medium-High (*n* = 57), Medium-Low (*n* = 47), or Low (*n* = 16) and 50 sex offenders prior to being designated as a Dangerous Offender

Note: Only significant group comparisons relative to the DO group are shown.

***$p < .001$.

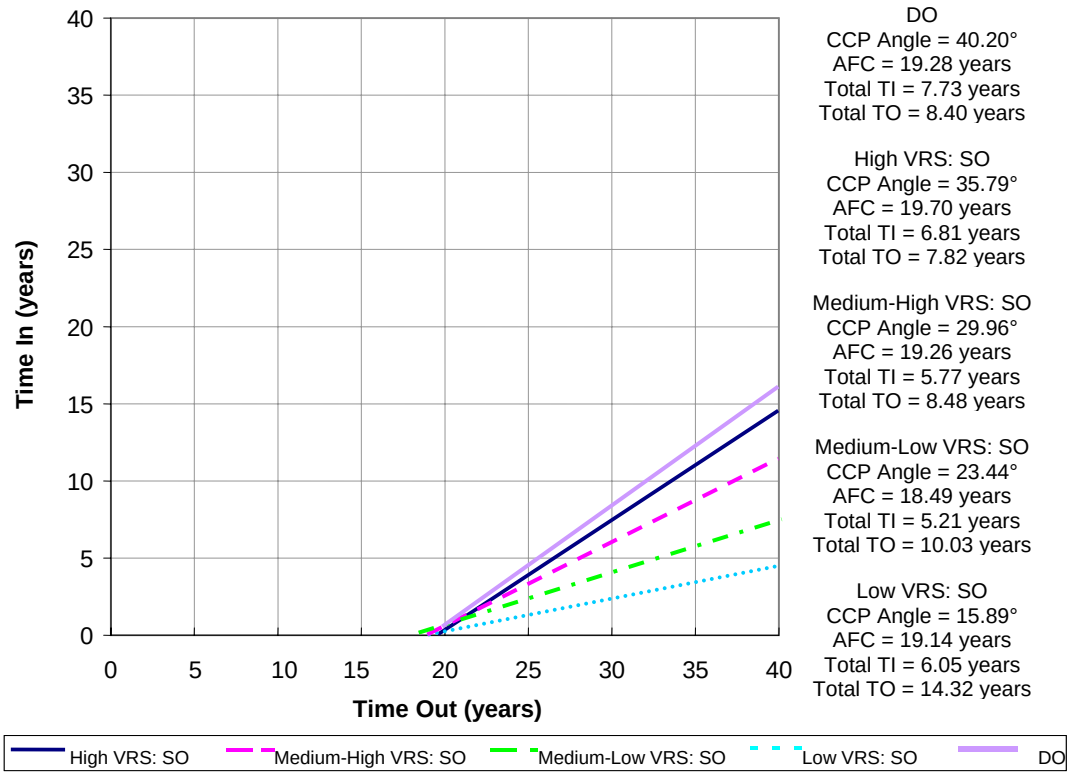

Figure 4.8: The mean CCP Angles, AFC, and Total TI of 148 sex offenders rated on the VRS: SO as High (n = 28), Medium-High (n = 57), Medium-Low (n = 47), or Low (n = 16) and 50 sex offenders prior to being designated as a Dangerous Offender

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

4.3.4 The CCP Angle and Sex Offender Type: Post Hoc Analysis

An earlier study whose primary goal was to examine the effectiveness of treatment for sex offenders briefly investigated the CCP angle as a function of sex offender type and found that mixed offenders had a mean CCP angle of 25.4°, rapists had 21.0°, child molesters had 12.1°, and incest offenders had 5.4° (Nicholaichuk, Gordon, Gu, & Wong, 2000). The percentage of sexual crimes against total crimes was 24% for the mixed offenders who assaulted both adults and children, 17% for the rapists, 40% for the child molesters, and 24% for the incest offenders. Although the child molesters showed the largest percentage of sexual crimes, they committed fewer total crimes than the mixed group and rapists, whereas the incest offenders committed the fewest crimes. The mixed group and rapists first came into prison at about age 20 years, the child molesters at about age 24 years, and the incest offenders at about age 27 years.

Although it was not specified a priori, exploratory post-hoc analysis based on sex offender type was conducted on the total sex offender sample. Research samples have generally been partitioned on the basis of the most current offense and victim characteristics, hence, the familiar typology of rapists, child molesters, exhibitionists, and others (Furby, Weinrott, & Blackshaw, 1989). A common assumption is that different sexual preferences lead to different patterns in recidivism.

Incest offenders quite consistently show the lowest reconviction rates (e.g., Doren, 1998; Firestone et al., 1999; Nicholaichuk et al., 2000) and so are predicted to have the smallest CCP angle. Rapists and mixed offenders have been found to have the

highest reconviction rates (Firestone et al., 1998; Prentky, Lee, Knight, & Cerce, 1997; Rice, Quinsey, & Harris, 1991; Seto & Barbaree, 1999) and so are predicted to have the largest CCP angle. The psychiatric history (e.g., personality disorder, PCL-R, months in hospital), nonsexual criminal history (e.g., nonviolent and number of incarcerations), sexual criminal history (e.g., % female victim and victim injury), and reconviction rates of rapists and mixed offenders appear comparable (Quinsey, Rice, & Harris, 1995). On the other hand, child molesters tend to differ and to show shallower survival curve for sexual reconviction compared to rapists and mixed offenders (e.g., Firestone et al, 1998; Nicholaichuk et al., 2000; Quinsey, Rice, & Harris, 1995). Child molesters are therefore predicted to have a larger CCP angle than incest offenders but a smaller CCP angle than rapists and mixed offenders.

The sex offender typology adopted in this study uses victim characteristic: rapists (i.e. adult victims only), child molesters (i.e. against boys under 16 years of age and/or girls under 14 years of age), mixed offenders (i.e. against both adult and underage persons), and incest offenders (i.e. against family members and/or relatives). Table 4.11 presents a cross-tabulation between VRS: SO risk group / DO status and sex offender type. The majority of sex offenders, 120 out of 198, were classified as rapists. Out of the remaining offenders, 28 were classified as child molesters, 32 as mixed offenders, and 18 as incest offenders.

The CCP angle and criminological variables were examined as a function of offender type. Means and standard deviations are presented in Table 4.12. The rapists (M = 35.36°) produced the largest mean CCP angle, followed by the mixed offenders (M = 29.67°), child molesters (M = 22.45°), and incest offenders (M = 14.16°). The rapists

had a significantly larger mean CCP angle than either the child molesters (Cohen's *d* = .7, which is considered a medium effect size) or incest offenders (Cohen's *d* = 1.3, which is considered a large effect size). The mixed offender group had a significantly larger mean CCP angle than the incest offender group (Cohen's *d* = 1.2, which considered a large effect size). The rapists and mixed offenders did not have significantly different mean CCP angles. See Figures 4.7 and 4.8. The above results supported the predictions for CCP angles as a function of sex offender type.

Significant group differences were found for several criminological variables as a function of offender classification: age at first conviction, age at first sexual conviction, age at first nonsexual violent conviction, length of time in prison, length of time out of prison, career length, sexual convictions, nonsexual violent convictions, total nonsexual convictions, and hence, density of sexual convictions and density of total convictions. Significant group differences were usually found between the incest offenders and the other sex offender groups (i.e. rapists, mixed offenders, child molesters).

Table 4.11

Crosstabulation between VRS: SO Risk Group / DO Status and Sex Offender Type (N = 198)

	Rapist/ Adult (*n* = 120)	Child Molester (*n* = 28)	Mixed (*n* = 32)	Incest (*n* = 18)
Low VRS: SO (*n* = 16)	7 (43.8%)	2 (12.5%)	1 (6.3%)	6 (37.5%)
Med-Low VRS: SO (*n* = 47)	29 (61.7)	6 (12.8)	4 (8.5)	8 (17.0)
Med-High VRS: SO (*n* = 57)	34 (59.6)	9 (15.8)	11 (19.3)	3 (5.3)
High VRS: SO (*n* = 28)	8 (28.6)	8 (28.6)	11 (39.3)	1 (3.6)
DO (*n* = 50)	42 (84.0)	3 (6.0)	5 (10.0)	0 (0)

Note: % within VRS: SO / DO group is in parentheses.

Table 4.12

The CCP Angle and Criminological Variable Means and Standard Deviations of 198 Sex Offenders[†] *Grouped by Offender Type*

	Rapist/ Adult (n = 120)	Child Molester (n = 28)	Mixed (n = 32)	Incest (n = 18)	F value
CCP Angle	35.35 (22.48)	22.50 (15.33)	29.67 (15.60)	14.16 (8.25)	**8.15*** **
AFC	18.48 (3.94)	20.09 (4.29)	19.80 (5.16)	20.80 (5.57)	**2.69***
AFSC (Age at First Sexual Conviction)	25.48 (7.89)	24.30 (4.82)	26.10 (7.15)	34.88 (9.39)	**8.34*** **
AFVC	21.53 (6.23)	24.23 (4.68)	23.24 (6.47)	27.89 (9.51)	**5.65*** **
AFNVC	18.92 (4.44)	21.57 (5.60)	21.97 (9.18)	21.24 (6.33)	**3.37***
# Time In	6.63 (4.36)	5.36 (4.74)	6.19 (3.12)	6.11 (2.74)	0.60, *ns*
# Time In + Out	12.27 (8.72)	9.71 (9.48)	11.38 (6.23)	11.22 (5.48)	0.60, *ns*
Length Time In	6.53 (3.87)	4.97 (2.95)	7.14 (3.73)	5.31 (2.14)	**3.07***
Length Time Out	7.77 (6.68)	9.60 (6.98)	9.74 (7.22)	17.24 (7.76)	**9.73*** **
Career Length	14.31 (7.59)	14.57 (7.88)	16.87 (8.65)	22.55 (8.48)	**6.42*** **
# Total Convictions	16.63 (12.30)	11.75 (9.52)	14.75 (10.05)	12.89 (6.90)	1.59, *ns*
# Sexual Convictions	1.90 (1.22)	3.89 (2.89)	3.19 (1.87)	1.94 (0.94)	**12.47*** **
# Nonsexual Violent Convictions	3.96 (4.25)	0.89 (1.37)	2.94 (2.92)	3.11 (2.91)	**4.71****
# Nonsexual Nonviolent Convictions	10.77 (9.54)	6.96 (8.07)	8.63 (8.13)	7.83 (5.91)	1.68, *ns*
# Total Nonsexual Convictions	14.73 (12.50)	7.86 (8.86)	11.56 (10.42)	10.94 (6.87)	**2.76***
Density = # Sexual Convict / Length Time Out	0.77 (1.71)	0.59 (0.60)	0.49 (0.47)	0.13 (0.06)	1.02, *ns*
Density = # Nonsexual Violent Convict / Length Time Out	1.36 (4.78)	0.13 (0.22)	0.46 (0.61)	0.24 (0.29)	**3.59***
Density = # Total Convict / Length Time Out	4.33 (7.10)	1.91 (1.81)	2.32 (2.43)	0.92 (0.71)	**5.02****

Note: Standard deviations are in parentheses. Age demographics, Time In, Time Out, and Career Length are in years.
†148 sex offenders rated on the VRS: SO and 50 sex offenders eventually designated as Dangerous Offenders
****p* < .001. ***p* < .01. **p* < .05. *ns* = nonsignificant *p* value.

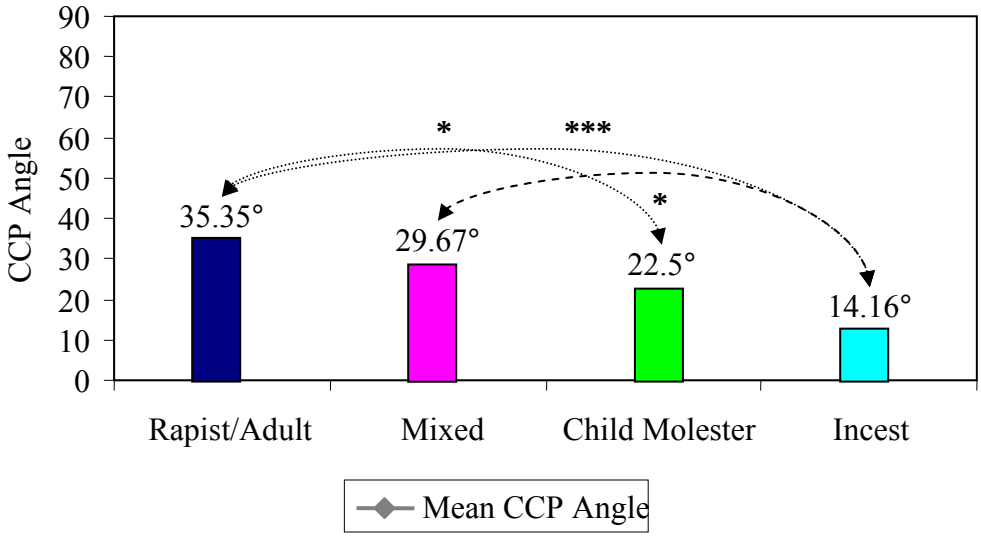

Figure 4.9: The mean CCP Angles of 198 sex offenders (148 sex offenders rated on the VRS: SO and 50 sex offenders eventually designated as Dangerous Offenders) grouped by sex offender type

****p* < .001. ***p* < .01. **p* < .05.

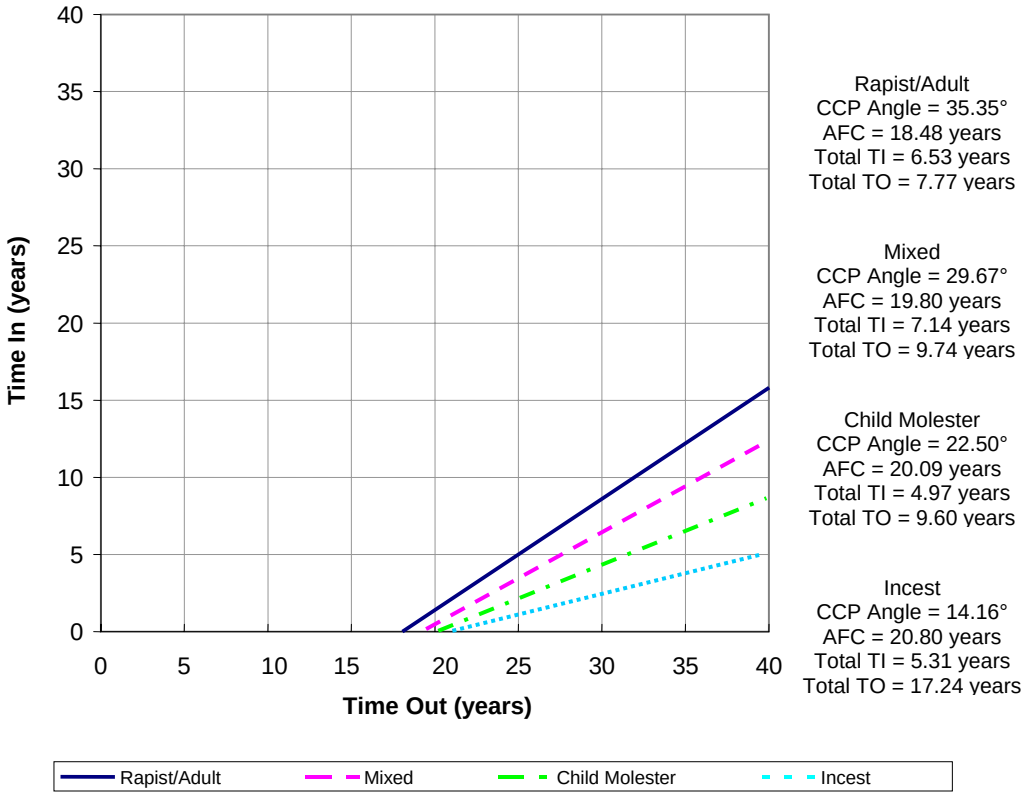

Figure 4.10: The mean CCP Angles, AFC, and Total TI of 198 sex offenders (148 sex offenders rated on the VRS: SO and 50 sex offenders eventually designated as Dangerous Offenders) grouped by offender type

Note: AFC = age at first conviction; TI = time in prison; TO = time out of prison

4.4 Discussion

4.4.1 The CCP Angle of High, Medium, and Low PCL-R Offenders

Criminal career severity varied with psychopathy group in this study, which is consistent with the results of Study 1 and Hemphill et al.'s (1998). The high PCL-R group had a worse criminal career than both the medium and low PCL-R groups, providing evidence of the CCP's criterion validity. The CCP angles distributed in the same pattern as did high-, medium, and low-psychopathic offenders.

Criminological variables provided another measure of criminal career severity but there were few significant differences found among the three PCL-R groups. Other than number of violent convictions and length of time outside of prison, predicted group differences as discussed previously were not found for the majority of criminological variables. There was a nonsignificant trend (e.g., age at first conviction), there was a trend contrary to the predicted direction (e.g., number of Time In), or there was no trend at all (e.g., length of Time In). Overall and similar to the results of Study 1, there was a lack of consistency found in the criminological variables for the three PCL-R groups.

Conversely, criminal career severity, as measured by the CCP, was clear and consistent. The high PCL-R group had a more serious criminal career than both the medium and low groups, and the medium group more serious than the low group. The CCP, which is essentially an amalgamation of a number of criminological variables, showed the predicted differences among the three PCL-R groups.

4.4.2 The CCP Angle of High, Medium, and Low VRS Offenders

The analysis for violent offenders rated on the VRS showed similar findings to the PCL-R sample. As predicted, the CCP angles of the different VRS groups were all significantly different from each other. High scorers had a larger CCP angle than both medium and low scorers, and medium scorers had a larger CCP angle than low scorers, which provided further evidence of the CCP angle's criterion validity.

4.4.3 The CCP Angle of High, Medium-High, Medium-Low, and Low VRS: SO Offenders and DO

The finding that criminal career severity varied as a function of risk group was also replicated in the sample of sex offenders rated on the VRS: SO. High scorers had a more serious criminal career than medium and low scorers. When the Dangerous Offenders, all sex offenders, were compared to the VRS: SO sample, the results showed that the DO had the worst criminal career. The discretionary nature of the application of the DO legislation, however, means that some non-DO may have committed just as serious crimes as DO. Despite these potential variations, DO overall still have the largest CCP angle among the sex offender groups. The trend for CCP angles observed in the DO and VRS: SO sample was consistent with predictions and provided further evidence of the CCP's criterion validity.

Similar to findings for the PCL-R sample, the pattern of ranking of criminological variables for the VRS: SO and DO was generally inconsistent. Some significant mean group differences were in the predicted direction but others showed no coherent pattern. Taken altogether, the results suggest that for the VRS: SO and DO

samples, the criminological variables did not appear to be reliable measures of the severity of criminal career. However, the CCP, which aggregates a number of criminological variables, appears to provide a consistent index of criminal career severity.

A criticism of the VRS: SO sample was the longer career length of the low VRS: SO compared to the other risk groups. A difference of at least five years existed between the low VRS: SO and the other risk groups. It may be argued that the extra five years was, to some extent, responsible for the relatively shallower regression line observed in the low VRS: SO, especially if number of sexual convictions, and number and length of incarcerations are also considered. In such instances, the low VRS: SO could be excluded from the group comparisons. On the other hand, it may also be argued that the longer career length actually works against low-risk offenders because it gives them more time during which to re-offend and "catch up" with their higher-risk counterparts who tend to re-offend much sooner. Previous research has shown a shallow survival curve for low-risk sex offenders (e.g., Hanson & Bussiere, 1998). Therefore, the regression line of the low VRS: SO can be argued to be an accurate reflection of their criminal career severity.

4.4.4. The CCP Angle of Rapists, Mixed Offenders, Child Molesters, and Incest Offenders

As predicted, incest offenders had the smallest CCP angle; rapists and mixed offenders had the largest, but comparable CCP angles; and child molesters had a CCP angle that was significantly larger than that of incest offenders but significantly smaller

than that of rapists. The results of the present study are consistent with earlier studies that have demonstrated rapists, child molesters, and incest offenders as constituting very different populations of offenders (e.g., Firestone et al., 1999), thus, providing further evidence of the CCP angle's criterion validity.

Criminal career severity as a function of sex offense typology was consistent with the results obtained by Nicholaichuk et al. (2000) and earlier recidivism studies. As indicated earlier, incest offenders show the lowest reconviction rates (e.g., Doren, 1998; Firestone et al., 1999; Nicholaichuk et al., 2000), whereas child molesters, rapists, and mixed offenders show higher reconviction rates compared to incest offenders ((Firestone et al., 1998; Prentky, Lee, Knight, & Cerce, 1997; Rice, Quinsey, & Harris, 1991).

Finally, the pattern of results for the criminological variables was generally inconsistent. Group differences were either significant and in the predicted direction or not significant and without any perceptible trend.

5. STUDY THREE: THE *CRIMINAL CAREER PROFILE* BEFORE AND AFTER TREATMENT: A "TURNING POINT" IN CRIMINAL CAREERS

A number of life events, such as marriage, employment, education, and treatment, can influence the progression of criminal careers and precipitate a substantial decrease in the frequency of offending (e.g., Farrington & West, 1995; Sorensen, 2000; Votey, 1991). In particular, there is strong evidence to support the effectiveness of appropriate treatment in significantly decreasing future offending (Gendreau et al., 1990; 1996), especially for high-risk offenders (Andrews et al., 1990; Andrews & Bonta; 1994). It stands to reason that treated compared to untreated offenders should have a lower frequency of offending and, hence, a less extensive and serious criminal career following treatment.

The objective of Study 3 was to establish the CCP angle's criterion validity with treatment – whether the CCP angle can be used to represent a *turning point* in criminal careers. In general, a turning point can be defined as a considerable change in the *frequency* or *severity* of offending, or both, following a certain event, such as treatment. In this Program of Research, a turning point in a criminal career as a result of treatment

was defined as a significant decrease in criminal career *severity* (i.e. CCP angles) from pre- to post-treatment. Such a definition has conceptually diverged from traditional indicators of recidivism (e.g., new charges, convictions, or both, and offense type), remarked by some authors to be a major methodological shortcoming and for which recidivism research has been repeatedly criticized (Nouwens, Motiuk, & Boe, 1993; Hemphill et al., 1998).

There are only two earlier studies that have investigated the CCP's ability to capture offending after treatment. First, Nicholaichuk, Gordon, Gu, and Wong (2000) have used the CCP to measure the effect of treatment on 296 sex offenders for an average of six years following release from prison. The treated group showed a significant decrease in CCP angle from pre- (19.9°) to post-treatment (4.7°), $t(295) = 12.02$, $p < .01$. The comparison group of 283 untreated sex offenders (i.e. matched on age at index offense, date of index offense, and number of convictions prior to index offense) also showed a significant decrease in CCP angle from pre- (12.9°) to post-treatment (6.8°), $t(282) = 5.81$, $p < .01$. The above findings suggest that, although both groups showed a significant decrease in CCP angle from pre- to post-treatment, the decrease in CCP angle was considerably larger for the treated group.

A concern in Nicholaichuk et al.'s study (2000) was that, at pre-treatment, the treated group appeared to be more criminalized than the comparison group as evidenced by the significantly larger CCP angle of the treated group (19.9°) compared to the comparison group (12.9°), $t(577) = 3.15$, $p < .002$. At post-treatment, the two groups were predicted to show significantly different CCP angles but this was not the case. The

difference in mean CCP angle between the treated (6.8°) and comparison group (4.7°) was 2.1°, which did not appear to be significant.

An interesting aspect of Nicholaichuk et al.'s (2000) study pertains to how else the treated and untreated groups could have been matched at pre-treatment. The two groups were matched on a number of criminological variables to control for potential effects of variation in criminal history on treatment outcome. Another means of matching the two groups was available through the CCP angle, which is considered a summary measure of a number of criminological variables and an index of the seriousness of criminal careers. The pre-treatment CCP angle could be used as a pre-treatment matching variable. In fact, the untreated group had a larger pre-treatment CCP angle than the treated group, which suggests that the two groups did not have comparable criminal career severity at pre-treatment.

Looman, Abracen, and Nicholaichuk (2000) compared the effect of treatment of 89 high-risk/high-need sex offenders with a matched comparison group of 89 sex offenders. Matching criteria similar to those used by Nicholaichuk et al. (2000) were used. The follow-up period was a mean of eight years after release from prison. Although the CCP angles of both groups were not significantly different from each other at pre-treatment (treated: 33.8° vs. untreated: 29.8°, $t(176) = .91$, *ns*), at post-treatment, the treated group's CCP angle (5.7°) was significantly smaller than that of the untreated group (11.8°), $t(176) = 2.83$, $p < .005$. The results suggest that, at pre-treatment, the two groups were comparable with regard to the criminological variables used to match the groups and also with regard to criminal career severity. Pre-post-treatment comparisons of CCP angles revealed results similar to those from Nicholaichuk et al.'s (2000) study.

The treated and untreated groups both showed a decrease in CCP angles after the eight-year, follow-up period, $t(88) = 8.36$, $p < .000$ and $t(88) = 4.89$, $p < .000$), respectively. Although reduction in new crimes occurred in both groups, the largest effect was found in the treated sample, an effect which the CCP was able to measure.

The above studies have focused their investigation on sex offenders. The objective of Study 3 was to assess the validity of the CCP angle to measure the effect of treatment on nonsexual, violent offenders. The utility of the CCP angle in measuring criminal career severity and change in criminal career severity after treatment was being extended in another offender group and treatment program: nonsexual, violent.

5.1 Hypothesis

Treated offenders have a significantly smaller CCP angle than untreated offenders (i.e. treatment dropouts) at post-treatment (Hypothesis 1). The treated group's CCP angle significantly decreases from pre- to post-treatment (Hypothesis 2).

5.2 Method

5.2.1 Participants

Although the CCP has been used to represent change in risk of recidivism of sex offenders after treatment, it has not been utilized in the same way for nonsexual, violent offenders. The sample for Study 3 started with the 133 nonsexual, violent offenders rated on the *Violence Risk Scale* (VRS; Wong & Gordon, 2006) from Study 2. All of

them had a violent index offense prior to treatment. The index offense is defined as the offense for which they were serving a prison sentence at RPC admission for participation in the Aggressive Behaviour Control (ABC) Treatment Program (see Section 5.2.2). The ABC Treatment Program normally lasts between eight months and a year, after which offenders usually return to their parent institution to serve the remaining portion of their sentence. Given that past evaluations of the ABC Treatment Program have shown the effectiveness of treatment in reducing recidivism (e.g., Gordon, 2000; Wong et al., 1999), treatment effects were predicted to be present in the sample of offenders in Study 3.

As stated in Section 1.1.2.3, the population of interest in this Program of Research is serious offenders. Only offenders who were rated as high-risk to re-offend ($45 < \text{VRS Total Score} \leq 78$) were selected ($N = 47$). A visual inspection of the shape of the distribution of the length of treatment of the 47 offenders revealed a bimodal distribution, with the demarcation line appearing to fall around four months of treatment. Because efficacy studies on the ABC Treatment Program have found that violent offenders who received four months or less of treatment, considered the *treatment dropouts*, compared to offenders who had at least four months of treatment, considered the *treated* group, did not necessarily benefit from treatment as evidenced by higher rates of re-offending for both violent and nonviolent crimes (Gordon, 2000), the 47 offenders were divided into two groups based on length of their treatment in the ABC Treatment Program.

Of the 47 offenders, 21 were treated offenders and 26 were treatment dropouts. The length of treatment (in months) of treated offenders ($M = 6.79$, $SD = 1.77$) was

significantly longer than that of treatment dropouts (M = 1.87, SD = 0.96), $t(45) = 12.12$, $p < .001$. A t-test did not reveal any significant differences between the 21 treated offenders and 26 treatment dropouts on any criminological variables as well as risk ratings (see Table 5.1). The sample was considered comparable at pre-treatment.

Consistent with Wormith and Olver's (2002) findings, the most likely reason for treatment attrition of the dropout group was *staff-initiated* discharge due to violence and aggression against staff and other patients, as well as lack of motivation and non-compliance with program requirements. *Client-initiated* discharge was less common but when it occurred, was usually preceded by a major institutional infraction or a negative program performance evaluation. *System-initiated* discharge due to day parole, statutory release, and administrative reasons was not a reason for treatment non-completion in this sample.

Of the 47 offenders, 24 (51.0%) were Caucasian, 21 (44.7%) were Aboriginal, and 1 was Black (4.3%). There was no significant difference found between the mean CCP angles of the two predominant ethnic groups: Caucasian (M = 53.20°, SD = 21.48°) and Aboriginal (M = 45.20°, SD = 24.31°), $t(43) = 1.17$, $p = .248$. Their mean age in years upon admission to RPC was 29.69 (SD = 5.10), upon discharge from RPC was 29.97 (SD = 5.10), and upon release from prison into the community was 31.62 (SD = 5.40).

The post-treatment period or follow-up time or career length after treatment was, on average, 9.97 (SD = 5.34) consecutive years from date of release into the community to the data collection date (April 01, 2005) or end of the last sentence (i.e. final warrant expiry date), whichever was longer. Recidivism during the follow-up period was %,

with recidivists having had at least two incarcerations and two prison releases subsequent to their index sentence (i.e. during the post-treatment period). Six offenders, four treated and two dropouts, had a final warrant expiry date that was past the data collection date. The range of sentences that have yet to be served was from 0.79 to 2.90 years. The mean age in years at the final warrant expiry date was 36.37 (*SD* = 6.53) and at data collection date was 40.53 (*SD* = 5.34). The mean age in years at follow-up (i.e. at data collection date or at final warrant expiry date, whichever was longer), was 40.95 (*SD* = 5.55). The two groups did not differ significantly on any of these ages (see Table 5.2).

5.2.2 Setting

All 47 offenders were admitted to the ABC Treatment Program at the RPC (see Section 3.2.2) for treatment and management of violence and aggression. The ABC Treatment Program is an accredited intensive treatment program, designed specifically to target high-risk and high-need violent offenders consistent with the principles of risk, need, and responsivity (Andrews et al., 1990). It is based on cognitive-behavior and social learning theories, and emphasizes relapse prevention and mental health stabilization (Polvi, 2006). Criminogenic factors or dynamic variables associated with risk of future recidivism are addressed through individual and group therapy, psycho-education, and supplementary programs that provide further skill enhancement (e.g., education, employment, and leisure). The effectiveness of the ABC Treatment Program in reducing general and violent recidivism has been demonstrated (e.g., Gordon, 2000;

Wong et al., 1999) and, as such, treatment effects are predicted to be present in the sample of offenders in Study 3.

5.2.3 Instruments and Procedures

The independent variable was treatment in the ABC Treatment Program and the dependent variable was criminal career severity, as measured by CCP.

5.2.3.1 The Criminal Career Profile

The CCP (see Section 2 for a detailed description) was used to measure criminal career severity before and after treatment. The pre-treatment CCP spanned the time from the date of first conviction to the end date of the index sentence at admission to the RPC. The post-treatment CCP spanned the time from the date of release into the community following the end date of the index sentence to the data collection date or final warrant expiry date, whichever was longer.

A post-treatment CCP can be calculated if the offender has two incarcerations and two prison releases. Some of the data points of a post-treatment CCP are similar to a pre-treatment CCP. First, the *post-treatment initial Time Out* is the time that an offender has spent in the community after the end of his index sentence at treatment. If he is never reconvicted and sentenced for another offense, then the last datum on his CCP is this Time Out, represented as the first horizontal line following the offender's last Time In that involved treatment. As more time passes from his last Time In and he continues to remain in the community, the offender's regression line becomes less steep. If the offender is never convicted and sentenced for another offense until his death, then the

termination of his CCP can be considered to have occurred after he was released from prison following his involvement in correctional treatment. If he is convicted of another offense, the initial Time Out lasts until the day before he starts serving his next prison term.

Second, the *post-treatment initial Time In* (two third of sentence) is represented by the first vertical line on a CCP after the offender has been released into the community following his involvement in correctional treatment. The post-treatment initial Time In indicates that the offender has recidivated after treatment.

Third, the *post-treatment subsequent Time Out* is calculated in the same way as the post-treatment Initial Time Out. Just as the subsequent Time Out may be the last entry in a CCP had the offender not recidivated after release into the community, so the post-treatment subsequent Time Out may be the datum representing the termination of an offender's criminal career so long as no further convictions are recorded thereafter. The post-treatment final Time Out appears as the horizontal line that is farthest away in distance from the *x*-axis.

Fourth, the *post-treatment subsequent Time In* (two third of sentence) is calculated in the same way as the post-treatment initial Time In. If the offender incurs a life sentence without parole, then the last entry on his CCP is this Time In. In such a case, the last Time In appears as the vertical line that is farthest in distance from the *y*-axis.

5.2.3.2 The Violence Risk Scale

The VRS (Wong & Gordon, 2006; described in detail in Section 3.2.3.3) was used at pre-treatment to determine risk of future violent offending: low (VRS ≤ 30), medium (30 < VRS ≤ 45), and high (45 < VRS ≥ 78). Only high-risk offenders were included in Study 3 to control for potential effects of differential risk on treatment outcome.

5.2.3.3 Other procedures

A repeated measures analysis of variance (ANOVA) was used to test the hypotheses in Study 3. The presence or absence of recidivism after treatment was ascertained through the CPIC and OMS (see Section 2.4.1 and Appendix C). Follow-up time was calculated by subtracting age at release from prison from age at data collection or age at final warrant expiry date, whichever was longer. Because the last sentence length (i.e. final warrant expiry date) was known at the time of data collection, regardless of whether it was past the data collection date, the last sentence length was included in the calculation of the post-treatment CCP. Recidivism after treatment was defined as any conviction (i.e. violent and nonviolent) following release from prison (i.e. following treatment in the ABC Treatment Program) and determined through official records (see Appendix C).

5.3 Results

5.3.1 Description of Treated Offenders vs. Treatment Dropouts Before Treatment

Table 5.1 contains the means and standard deviations of treated offenders and treatment dropouts for a number of criminological variables and VRS scores. As has been indicated in Section 5.2.1, both groups were comparable before treatment on all variables in Table 5.1. Both groups started their criminal careers early, incurred numerous convictions (one violent for every two nonviolent) before treatment, were convicted of about two violent offenses per year of living in the community since the start of their criminal career, had a career length that was about 13 years, and scored highly on the VRS, all of which provided evidence of a high-risk, criminalized group.

Table 5.1

The Criminological Variable and Violence Risk Scale Means and Standard Deviations of Treated Offenders (n = 21) vs. Treatment Dropouts (n = 26) Prior to Treatment

	Treated† (*n* = 21)		Dropouts (*n* = 26)			
	M	*SD*	*M*	*SD*	*t*	*p*
AFC	17.46	1.31	17.04	2.39	0.73	.471
AFVC	18.97	1.97	20.62	4.66	1.52	.136
AFNVC	18.24	2.29	17.16	2.34	1.60	.118
# Convictions	18.90	10.46	22.42	12.94	1.01	.319
# Violent Convictions	5.57	3.23	5.46	4.13	0.10	.921
# Nonviolent Convictions	13.33	8.46	16.96	10.20	1.29	.205
Violent/Nonviolent Ratio	0.58	0.42	0.43	0.39	1.24	.220
# Time In	5.90	3.71	6.96	5.63	0.74	.463
# Time In + Out	10.81	7.43	12.92	11.25	0.74	.463
Length Time In	7.55	2.74	8.42	4.28	0.80	.426
Length Time Out	5.01	3.43	4.78	3.82	0.22	.083
Career Length	12.57	3.39	13.20	6.01	0.43	.671
Density = # Violent Convictions / Length Time Out	2.11	2.17	1.87	1.82	0.40	.694
Density = # Total Convictions / Length Time Out	6.31	4.59	7.26	6.63	0.56	.579
Index Offense Sentence Length	7.58	3.58	7.73	6.11	1.52	.136
VRS Total Score	60.74	7.70	58.17	6.53	1.24	.222
VRS Static	14.03	2.91	13.32	1.98	0.99	.330
VRS Dynamic	46.84	6.06	44.86	5.24	1.20	.237

Note: Age demographics, Time In, Time Out, and Career Length are in years.
†The length of treatment (in months) of treated offenders ($M = 6.79$, $SD = 1.77$) was significantly longer than that of treatment dropouts ($M = 1.87$, $SD = 0.96$), $t(45) = 12.12$, $p < .001$.

5.3.2 Description of Treated Offenders vs. Treatment Dropouts After Treatment

Table 5.2 contains the means and standard deviations for select ages and time periods relevant to pre- and post- treatment and Table 5.3 contains the post-treatment means and standard deviations for a number of criminological variables. Other than two dropouts (4.3%), all (95.7%) were reconvicted of at least one violent offense. Seventeen (81.0%) out of the 21 treated offenders and 20 (76.9%) out of the 26 dropouts were reconvicted of at least one nonviolent offense. On average, both groups were about the same age when they recidivated, and did so very shortly after release from prison into the community. The treated offenders were re-incarcerated and released as frequently, and spent time in and out of jail as long as did the dropouts. However, the dropouts had significantly more nonviolent convictions than the treated group. Post-release career length was not significantly different for both groups.

Although survival analysis, which calculates the cumulative proportion of offenders being free of any/violent/nonviolent reconvictions following treatment was not done; time to *first* reconviction following treatment was calculated. Time to first reconviction of any, violent, or nonviolent crime was not significantly different between the treated and dropout group.

Table 5.2

The Means and Standard Deviations for Select Ages and Time Periods Relevant to Pre- and Post-Treatment: Treated Offenders (n = 21) vs. Treatment Dropouts (n = 26)

	Treated (n = 21)		Dropouts (n = 26)			
	M	*SD*	*M*	*SD*	*t*	*p*
Age at Admission	29.20	3.75	30.08	6.03	.58	.563
Age at Discharge	29.63	3.81	30.24	6.00	.40	.691
Age at Release	31.17	3.75	31.99	6.49	.51	612
Age at First Reconviction (AFR)	32.43	3.95	32.43	6.62	.13	.900
Age at First Violent Reconviction (AFVR)†	33.52	4.08	33.52	6.29	.00	1.000
Age at First Nonviolent Reconviction (AFNVR)††	33.37	3.93	32.40	6.90	.51	.610
Time to First Reconviction	1.02	1.18	1.22	1.35	.53	.598
Time to First Violent Reconviction†	1.91	1.63	1.54	1.49	.78	.441
Time to First Nonviolent Reconviction††	1.59	1.35	1.26	1.38	.75	.461
Age at Data Collection Date†††	39.88	5.26	41.39	5.78	.93	.358
Age at Warrant Expiry Date††††	36.53	5.23	36.23	7.52	.16	.877
Age at Follow-Up (DCD or WED, whichever was longer)	40.30	5.21	41.48	5.86	.72	.474

Note: Age and length of time are in years.
†21 Treated vs. 24 Dropouts
††17 Treated vs. 20 Dropouts
†††Data Collection Date: April 01, 2005
††††4 Treated and 2 Dropouts had a WED past the DCD. Range of unserved sentences was 0.79 to 2.90 years, with the longer unserved sentences belonging to treated offenders. However, ages at WED and at follow-up were not significantly different for both groups.

Table 5.3

The Criminological Variable Means and Standard Deviations of Treated Offenders (n = 21) vs. Treatment Dropouts (n = 26) After Treatment

	Treated (n = 21)		Dropouts (n = 26)			
	M	*SD*	*M*	*SD*	*t*	*p*
# Convictions	6.71	3.72	13.27	11.52	2.26	**.029**
# Violent Convictions	3.32	1.86	4.88	4.04	1.57	.124
# Nonviolent Convictions	3.39	3.01	8.38	10.14	2.02	**.049**
Violent/Nonviolent Ratio	1.10	0.86	0.92	1.08	0.49	.629
# Time In	3.38	2.52	3.81	3.45	0.47	.638
# Time In + Out	7.76	5.04	8.62	6.91	0.47	.638
Length Time In	3.05	2.14	3.68	4.08	.64	.523
Length Time Out	6.47	5.51	6.91	4.85	.29	.772
Career Length	9.20	4.94	10.59	5.73	.878	.384
Density = # Violent Convictions / Length Time Out	0.92	0.69	1.28	1.38	1.04	.305
Density = # Total Convictions / Length Time Out	2.86	2.45	3.01	4.41	0.13	.900

5.3.3 The Pre- and Post-Treatment Criminal Career Profiles of Treated Offenders vs. Treatment Dropouts

The CCP means and standard deviations of treated offenders vs. treatment dropouts before and after treatment are presented in Figures 5.1 and 5.2. Career length in years for the whole sample before treatment was 12.91, whereas after treatment (i.e. follow-up) was 9.70; the two groups did not differ in career length before and after treatment. A 2 (group: treated vs. dropouts) x 2 (treatment: pre- vs. post-treatment)

repeated measures analysis of variance revealed that the main effects of group, $F(1,45) = 4.41$, $p = .041$, and treatment phase, $F(1,1) = 62.85$, $p < .001$, were significant. The between-group difference in CCP angles was not significant at pre-treatment, $t(45) = 0.91$, $p = .365$, whereas it was at post-treatment, $t(45) = 2.41$, $p = .020$. The effect size (d) at post-treatment was .7 and considered a medium effect size. The within-group difference from the pre- to the post-treatment phase was, however, significant for both treated offenders, $t(20) = 5.67$, $p < .001$, and dropouts, $t(25) = 5.47$, $p < .001$. The pre-post-treatment effect size (d) for the treated group was 2.5 and for the dropouts was 2.2, both of which are considered large. The interaction of group by treatment phase, however, was not significant, $F(1,1) = 0.97$, $p = .329$. There was clearly a reduction in CCP angles from the pre- to the post-treatment phase but post-treatment changes could not be clearly attributed to treatment effects.

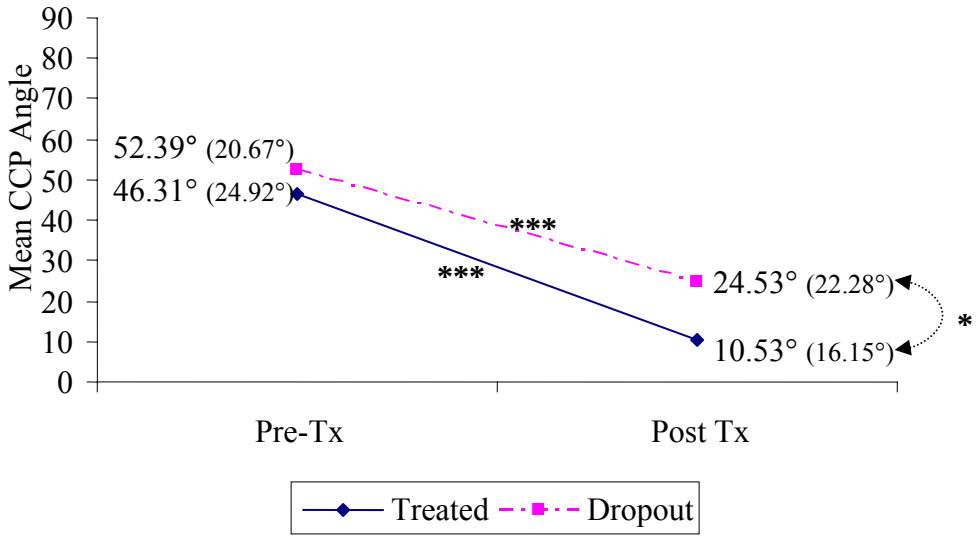

Figure 5.1: The Mean CCP Angle of Treated Offenders (*n* = 21) vs. Treatment Dropouts (*n* = 26) Before and After Treatment

Note: Standard deviations are in parentheses.
† Pre-treatment career length: 12.91 (*SD* = 4.97) years
††Post-treatment career length: 9.70 (*SD* = 4.49) years
****p* < .001. * *p* < .05.

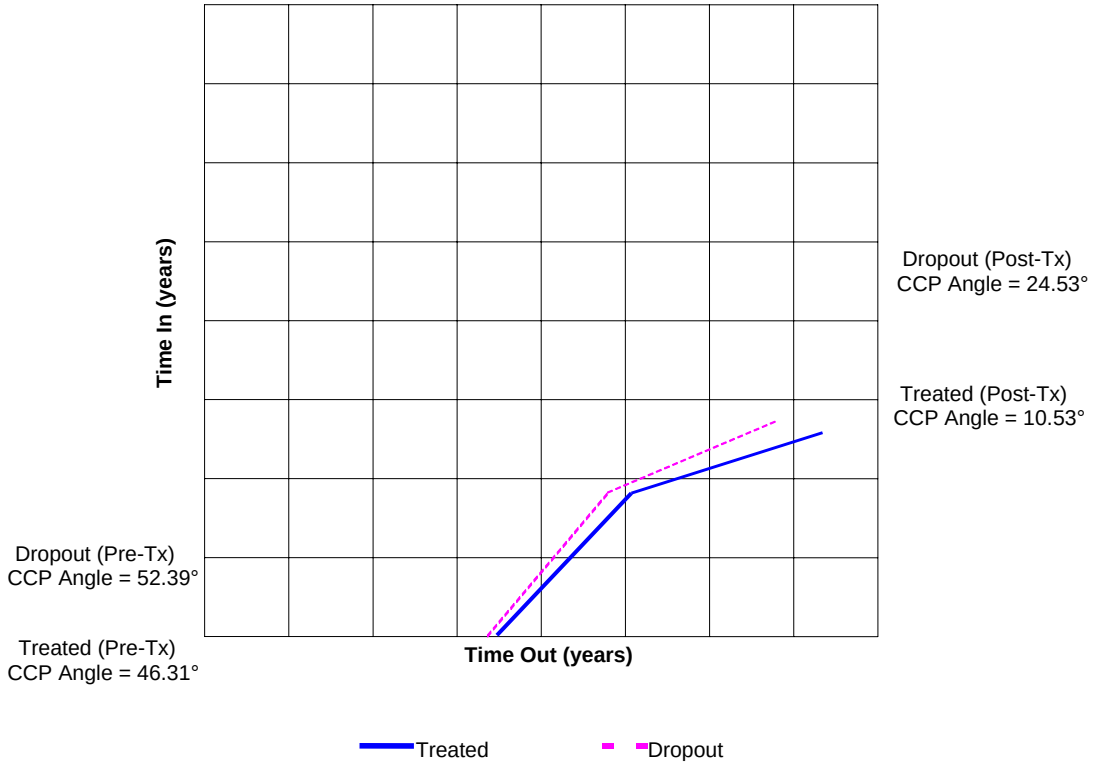

Figure 5.2: The Mean CCP Angle of Treated Offenders (n = 21) vs. Treatment Dropouts (n = 26) Before and After Treatment

5.4 Discussion

The utility of the CCP angle in measuring change in criminal career severity was shown in Study 3. The reduction in CCP angle, however, could not be clearly attributed to treatment, given that the interaction between group and treatment was not significant. Although the treated and dropout group's CCP angles were comparable at pre-treatment and significantly different at post-treatment, both groups showed a significant decrease in CCP angles from the pre- to the post-treatment phase.

The finding that dropouts also improved over time appears consistent with the age effect observed in offender populations. The age effect is the observation that, after a certain age, offending decreases considerably with increasing age. As Hirschi and Gottfredson (1983) have reported, the age effect occurs in all groups of offenders and is invariant across social conditions. Having ensured that the treated group and dropouts were comparable on a number of criminological variables prior to treatment, the ubiquitous albeit not well understood age effect may have caused the dropouts to improve over time. The age effect was examined in Study 4.

Although the results of the present study did not clearly support the effectiveness of treatment, the use of the CCP to measure change in criminal career severity *after* the advent of treatment is relatively novel compared to other measures, such as criminological variables and survival analysis. The CCP was used to measure treatment changes in only two published studies (i.e. Looman, Abracen, & Nicholaichuk, 2000; Nicholaichuk et al., 2000).

Consistent with Studies 1 and 2, the criminological variables in Study 3 showed very few significant group differences post-treatment. Other than nonviolent convictions and total convictions after treatment, predicted group differences after almost a mean follow-up of 10 years post-treatment were not observed. Total convictions, the sum of all violent and nonviolent convictions, was significantly different only because the nonviolent conviction mean was significantly different between the two groups and so there was really only one significant difference between the treated and dropout group.

Also consistent with Studies 1 and 2, the criminological variables in Study 3 showed small, nonsignificant group differences that were either in the predicted or opposite direction. A trend that was contrary to the predicted direction was an earlier time to reconviction of any offense for the treated offenders compared to the dropouts. Such results arising from the use of criminological variables to measure criminality after treatment could mire the interpretation of treatment effects.

The criticism with criminological variables as a measure of the effect of treatment on future criminal career severity stems from the way criminological variables are treated as individual entities and not as a whole. In study 3, the small and nonsignificant group differences for criminological variables during the follow-up period appeared to have been magnified by their aggregation through the CCP. Similar to the total score provided by actuarial measures of risk, for example, the VRS and the VRS: SO, the quantitative index of criminal career severity (i.e. angle) provided by the CCP can be considered a measure and reflection of treatment effects. Hence, the CCP would be preferable for use in assessing the effects of treatment on future criminal career severity.

Survival analysis also assesses the effects of treatment on future criminal behavior by comparing the cumulative proportion of treated vs. untreated offenders surviving at various points in time and, as such, is considered a methodological improvement over the use of binary measures of recidivism after treatment. Although survival analysis has its merits, it also has its limitations. A comparison of survival analysis with the CCP analysis has shown that despite no significant differences between number of treated and untreated offenders who recidivated after treatment as demonstrated by survival analysis, CCP analysis showed significant differences in rates of post-treatment offending between groups (Hemphill et al, 1998). The findings suggest that survival analysis may be statistically less sensitive than CCP analysis for detecting events that occur at different rates among groups, perhaps because the CCP incorporates many sentencing periods into its summary measure.

Survival analysis does not provide information beyond the cumulative proportion of offenders who have survived recidivism after treatment. In contrast, the CCP helps us to understand more about the pattern of offending after treatment and gives an indication of criminal career severity. The CCP provides information about individual offense conviction patterns and proportion of number and length of incarcerations and prison releases following treatment. As discussed in an earlier study, the CCP addresses these limitations of survival analysis (Nicholaichuk et al., 2000).

Similar to Study 1, a possible criticism was the small sample size, which may have weakened statistical power and contributed to the nonsignificant interaction between group and treatment. A larger sample size is therefore needed and a recommendation for future research. Another possible criticism arises from the use of

treatment dropouts instead of untreated offenders. Olver (2003) provided several methodological quandaries arising from the use of treatment dropouts, such as whether to classify a treatment dropout as a partially treated case, a control, or untreated, and when to classify an individual as a dropout, for instance, after having completed a fifth, a fourth, a third, or half of the program? Although there does not seem to be a consistent and uniform way of classifying dropouts, it would do well to consider previous findings about dropouts from the treatment program whose effectiveness is being assessed when the dropout group is being formed, provide a good description of it, and ensure that its length of time in treatment is significantly less than the treated group. Such attempts may limit the problems of attrition, sometimes considered a "methodological nuisance confounding the interpretation of treatment outcome findings" (Olver, 2003, p. 248). However, using dropouts to examine the effect of age on criminal careers was appropriate. Dropouts had received minimal amount of treatment, which was not predicted to significantly impact on the progression of criminal careers.

6. STUDY FOUR: THE *CRIMINAL CAREER PROFILE* WITH INCREASING AGE

Earlier theories of crime and desistance were sure to receive harsh criticism if they failed to account for the effect of age on criminal behavior. Research on the relationship between age and crime in the general population has revealed that offending usually starts in the mid-teens, peaks between the early and mid-20s, drops precipitously, and continues to decline into the 60s and 70s (Hirschi & Gottfredson, 1983). The shape of the age distribution of crime is quite invariant: It is independent of the time when the studies were done and of the place where the samples were drawn (Hirschi & Gottfredson, 1983; Shavit & Rattner, 1988).

With regard to type of crime, a consistent difference in the effect of age appears to exist between distributions of crimes against persons (e.g., physical and sexual assaults) and property crimes (e.g., break and enter). Based on official data, property crimes peak earlier and its frequency declines faster with age (Blumstein, Cohen, & Farrington, 1988; Hirschi & Gottfredson, 1983). Property crimes peak in the mid-teens, whereas crimes against persons peak between the late teens and early 20s (Hirschi & Gottfredson, 1983).

As stated previously, the offender population is not homogenous (Farrington, 1999; Farrington, Lambert, & West, 1998; Serin, 1994). The practice to date is to categorize offenders based on offense frequency, type, and severity. And of most interest to the public and forensic researchers and clinicians are arguably the repeat offenders who commit violent crimes. These offenders tend to start committing crimes in their mid- to late teens, their offending usually peaks in the late 20s, and they tend to continue with their criminal activity into their mid- to late 30s at a lower but steady rate compared to their peak rate, and then the rate noticeably decreases (Greenberg, 1979, 1996). They tend to commit about half of their offenses between ages 16 and 25 to 26 (Farrington, Lambert, & West, 1998).

Given that age affects the frequency of offending, it should affect criminal career severity. It is predicted that, for serious, repeat offenders, criminal career severity starts low, increases as the offender ages, peaks around the mid- to late 30s, and declines thereafter. As such, CCP angles as a function of age should generally reflect such a distribution. The objective of Study 4 was to further establish the CCP angle's criterion validity with age – whether CCP angles change as a function of age.

6.1 Hypothesis

The distribution of CCP angles with increasing age reflects the distribution of offending as a function of age.

6.2 Method

6.2.1 Sample

An untreated group of offenders was needed to test the validity of the CCP in capturing changes in criminal career severity with increasing age to control for any potential effects of treatment on the progression of criminal careers. Twenty-six high-risk, violent offenders who had a mean treatment length of 1.87 (*SD* = 0.96) months and considered as *treatment dropouts* in Study 3 were further examined in Study 4. It can be argued that less than two months of treatment does not impact significantly on future offending and, hence, criminal career. As such, any significant reductions in criminal career severity in the future is likely not due to treatment.

6.2.2 Setting

All 26 violent offenders were referred by their parent institution to the Regional Psychiatric Centre (RPC) Prairies (see Section 3.2.2) for violent offender treatment in the Aggressive Behavior Control (ABC) Treatment Program (see Section 5.2.2). However, for various reasons, such as institutional violence and aggression, and non-compliance with program requirements, they were prematurely discharged back to their parent institution after staying for a mean of 1.87 (SD = 0.96) of a supposedly eight-month treatment program.

6.2.3 Instruments and Procedures

6.2.3.1 The Criminal Career Profile

The CCP was described in detail in Section 2. For the purposes of Study 4, two possible ways to examine how CCP angles change with age were carried out (see Figure 6.1). One way (see upper half portion of Figure 6.1) was to compare CCP angles between age at release (M = 31.99; SD = 6.49) following RPC discharge and age at follow-up (M = 42.57; SD = 5.79). The CCP angle at age 32 spanned the date of first conviction to the end of the index offense sentence. The CCP angle at age 42 was calculated from the day after the index offense sentence had ended to the data collection date (May 29, 2006) or final warrant expiry date, whichever was longer. On average, career length in years at age 32 years was 13.20 (SD = 6.01) and at age 42 years was 10.59 (SD = 5.73). The method of comparing CCP angles between ages 32 and 42 years was considered *non-cumulative* because the CCP calculated for each period was independent of each other.

The CCP angle during the earlier years of the criminal career, for example at age 25 years just before the peak of offending in the offender population, could also be compared to the CCP angle at about age 32 years, which happens to be immediately after the peak of offending as described in the literature (see Greenberg, 1996). On average, career length in years at age 25 was 8.35 (SD = 1.41). Consistent with the effect of age on offending, it is predicted that the CCP angle at age 25 years is smaller than that at age 32 years.

The use of the non-cumulative method presents some methodological challenges. The limitations arise because of variable length of time periods, which could be a potential confound. A short, at-risk time period might give the sample enough time during which to re-offend, particularly because the sample has a high-risk of recidivism. Conversely, a long, at-risk time period, especially in the older years, might allow the age effect to take place, which could cause a sharp reduction in CCP angles. Hence, variable length of time periods could influence CCP angles, which could mire the interpretation of the effect of age on CCP angles.

To address the methodological shortcomings of the non-cumulative approach, cumulative CCPs with uniform time periods (see lower half portion of Figure 6.1) were built, which required very minimal effort. Having uniform time periods ensures that variability in career length does not influence the main effect of age on CCP angles. Given that the total career length of each offender was at least 21 years, it seemed reasonable to build the CCP every 7 years. In other words, a CCP encompassing only the first 7 years of criminal career was built, with another 7 years (i.e. 14 years in total) and so on (i.e. 21 years in total, 28 years in total, etc.) successively added to examine changes in CCP angles over time and, hence, this approach was referred to as the *cumulative* method. It was possible to build CCPs encompassing 21 years for all 26 offenders and, thereafter, 28 years for seven offenders, 35 years for three offenders, and 42 years for two offenders. Only CCPs up to 21 years of career length were presented because of an incomplete data set for the remaining time periods.

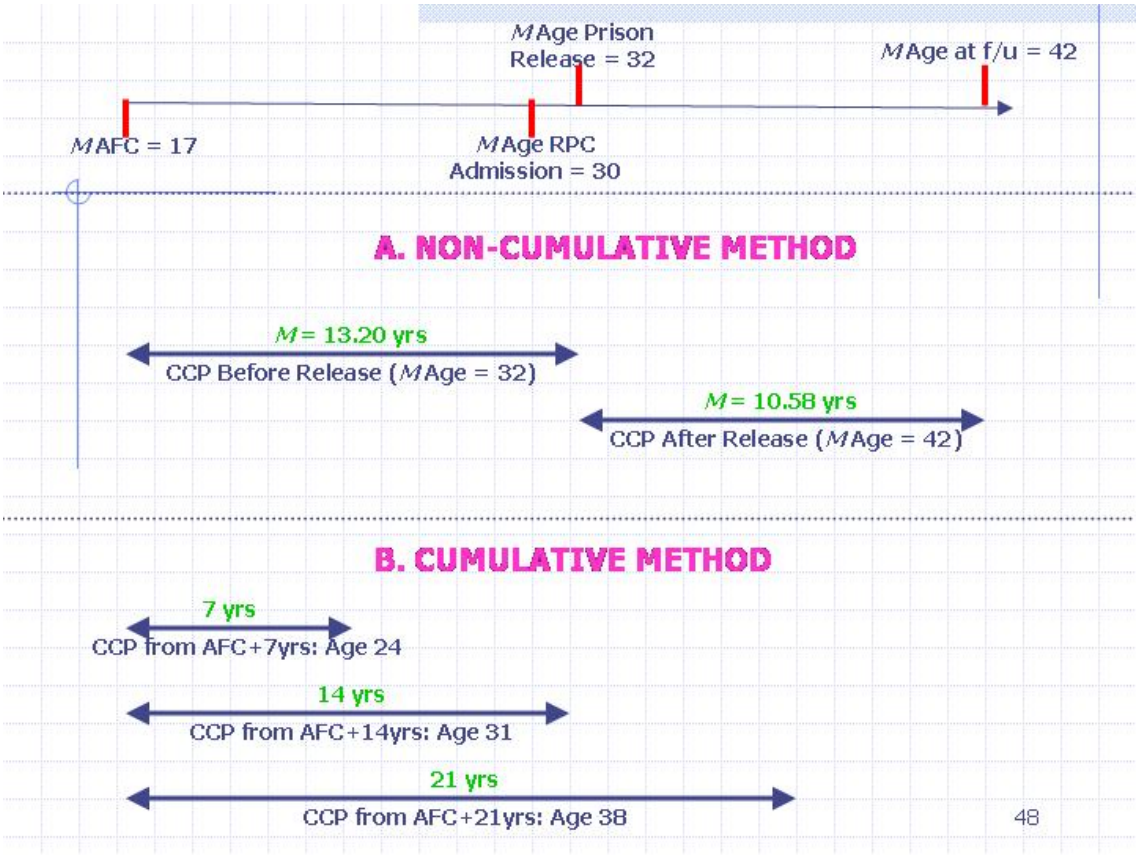

Figure 6.1: Timeline of Events for Calculating *Criminal Career Profiles* with Increasing Age

6.2.3.2 The Violence Risk Scale

The *Violence Risk Scale* (VRS; Wong & Gordon, 2006) was described in detail in Section 3.2.3.3. All of the 26 offenders were rated as high-risk to re-offend with another violent offense upon their admission to the RPC.

6.2.3.3 Other Procedures

A repeated measures analysis of variance (ANOVA) was used to test the hypothesis in Study 3.

6.3 Results

6.3.1 The Non-Cumulative Method

The CCP means and standard deviations of the 26 offenders for the non-cumulative method are presented in Figure 6.2. As has been reported in Study 3, the sample showed a significant reduction of 28° in CCP angles from age 32 years (M = 52.39°, SD = 20.67°) to age 42 years (M = 24.52°, SD = 22.28°), $t(25) = 5.47$, $p < .001$. The offenders' criminal career for the first 13 years was worse than the one during the next 10 years.

There was a main effect of age or time period, $F(2,50) = 20.92$, $p < .001$, with significant mean differences between the CCP angle at age 42 years and the two CCP angles at earlier time periods. The mean difference between CCP angles at age 25 years and at age 32 years approached significance ($p = .085$). The mean CCP angles at age 25 years, at age 32 years, and at 42 years roughly followed the distribution of offending as a function of age (see Figure 6.2), which supported the hypothesis of Study 4.

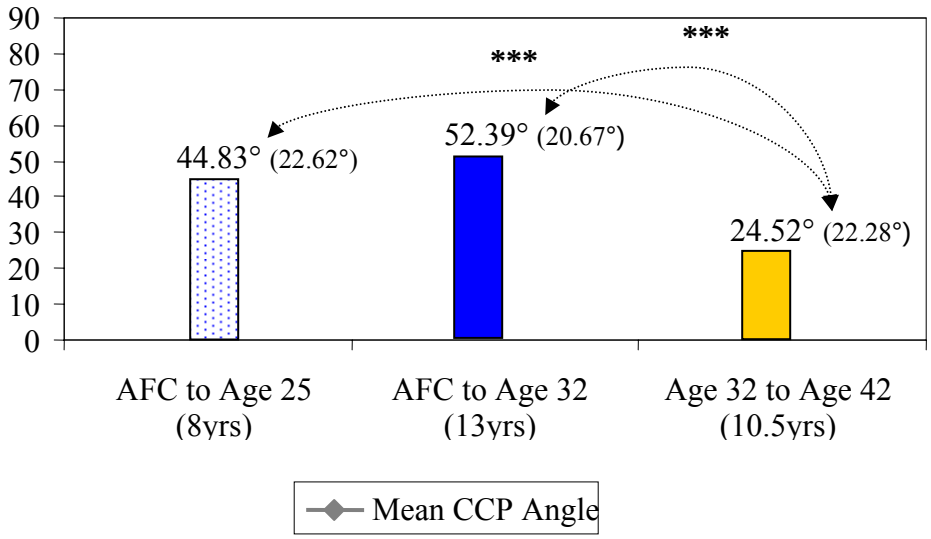

Figure 6.2: The Mean CCP Angles of 26 High-Risk, Violent Offenders: Non-Cumulative Method

Note: Standard deviations are in parentheses.

***$p < .001$.

6.3.2 The Cumulative Method

The CCP means and standard deviations of 26 offenders at different ages or time periods – 7, 14, and 21 years – for the cumulative method are presented in Figure 6.3. The group's mean CCP angle for the first seven years of their criminal career was 43.69°, which increased by a little over 6° during the next seven years and, after another seven years, decreased back to almost what it was during the first seven years of their criminal career. Although the main effect of age or time period was not significant, $F(2,50) = 2.04$, $p = .140$, pairwise comparisons of means between the CCP angle at age 31 years and both earlier and latter CCP angles were significant at $p = .032$. When the

mean CCP angle at 7-, 14-, and 21-year career length were graphed, the shape was roughly similar to the distribution of offending as a function of age (see Figure 6.3).

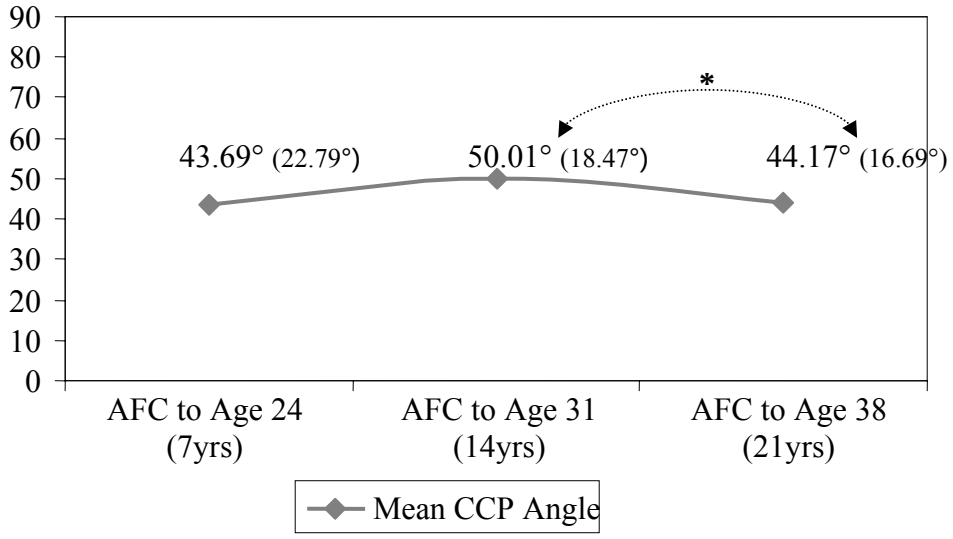

Figure 6.3: The Mean CCP Angles of 26 High-Risk, Violent Offenders: Cumulative Method

*$p < .05$.

6.4 Discussion

An exploratory study about the effect of age on criminal careers was done in Study 4. The age of criminal career onset for the dropouts was in the mid- to late teens, with career severity appearing worse in the early 30s compared to the mid-20s, and declining thereafter. The results are consistent with Greenberg's (1979) observations of comparable offense frequency between the 19-to-24 and the 29-to-34 age range. Greenberg (1979) noted that the rise in offending frequency in the earlier five-year

period is comparable to the decline in the latter five-year period. The mean CCP angles at specific time periods were also consistent with Greenberg's (1996) more recent description of offending frequency as a function of age. The overall pattern of CCP angles for the group of treatment dropouts in Study 4 is consistent with the distribution of offending as a function of increasing age, providing further evidence of the CCP angle's criterion validity.

In addition, the age of criminal career onset in Study 4 was consistent with Farrington (1992) and Farrington and Hawkin's (1991) research on criminal careers in the United Kingdom. Age of onset in their study was also in the mid- to late teens and inversely related to number of convictions and career duration.

The reduction in CCP angle in the older age range could be due to a number of reasons. Moberg (1946; as cited in Rowe & Tittle, 1977) listed ten reasons for why official statistics should show an age variation. The reasons are mainly artifactual, such as police bias, higher mortality of criminals, movement toward less visible types of crime, and age variations in skills of avoiding detection, but also include fundamental characteristics of aging such as decline in physical strength and reduction in utility of criminal behavior because of improved social status.

Among the reasons for the decline of offending with age, the most consistent is perhaps the *age effect* or *spontaneous remission* or *burn out effect* observed in offenders. In essence, it is the sharp reduction in criminal offending which starts to occur between the ages of 35 and 40 years, and hypothesized to be a result of improved social bonds (Hirschi & Gottfredson, 1983), hormonal decline (Kanazawa, 2003), or maturation and better appreciation of longer-term consequences (Burt, 2003).

The reduction in CCP angle after the early 30s in this study appears more consistent with the age effect observed in other violent offenders rather than with treatment effects, which may lead one to conclude that some high-risk offenders with very little treatment are less likely or less frequently to re-offend as they become older. Such a phenomenon may have been at work in Study 3, which showed that treatment dropouts, who are theoretically not supposed to improve, had a significant reduction in CCP angle as they became older. Given that dropouts tend to be more resistant to treatment and tend to continue with their criminal lifestyle more often than treated offenders, it is unlikely that the short amount of time (i.e. less than two months) that they were in treatment had contributed considerably to the reduction in their CCP angles as they became older.

Similar to Studies 1 and 3, a possible criticism of Study 4 was the small sample used. As indicated, a small sample may weaken statistical power and so significant differences between groups may not be sufficiently detected. To increase confidence in the results and to improve generalizability of results, a larger sample size is needed and a recommendation for future research.

7. GENERAL DISCUSSION

7.1. The CCP Fulfills the Necessary and Sufficient Conditions for the Conceptualization and Measurement of Criminal Careers

As indicated in the literature review, the conceptualization and measurement of criminal careers has been fraught with a number of shortcomings and, hence, the need for a simple metric to measure the necessary and sufficient conditions of criminal career: start, continuation, seriousness, change in seriousness, and end of a pattern of criminal activities.

A criminal career has an onset – the age at first conviction, which was consistently plotted on the CCP graph. Duration of a criminal career included both time spent in and out of prison, and in chronological order, plotted as a step function. The amount of time in prison was associated with seriousness of offenses and number of convictions, with more time in given for more serious offenses and more convictions. More time in relative to time out produced steeper regression lines; conversely, less time in relative to time out produced shallower regression lines. As such, the degree of seriousness of criminal careers was measured by the CCP regression line and quantified

by the slope of the regression line or corresponding angle. Larger slopes or angles were associated with steeper regression lines and, hence, more serious criminal careers. Smaller slopes or angles were associated with shallower regression lines and, hence, less serious criminal careers.

Criminal career severity has also been shown to change with age, as indicated by changes in CCP angle over time. Termination of criminal careers, as measured by the CCP, occurred when the final time out of prison becomes longer and consequently causes the CCP angle to become closer to 0°. Taken altogether, the necessary and sufficient conditions for the conceptualization and measurement of criminal careers were accounted for by the CCP, thus, providing evidence of its construct validity.

7.2 Key Findings

The four studies undertaken in this Program of Research provided evidence of the *Criminal Career Profile*'s (CCP), especially the CCP angle's criterion validity. The CCP was applied to different groups of offenders and consistently demonstrated predicted group differences across several studies. Criminal career severity, as measured by the CCP angle, was shown to vary as a function of psychopathy as measured by the *Psychopathy Checklist – Revised* and risk as determined by the *Violence Risk Scale*, *Violence Risk Scale: Sexual Offender Version*, and Dangerous Offender criteria. Similar results were found when the CCP was applied to a group of recidivists and nonrecidivists. Moreover, the CCP was useful in measuring criminal career severity after the advent of treatment. The CCP was also useful in exploring the pattern of criminal career severity with age, which was consistent with the shape of the

distribution of offending as a function of age. Taken altogether, the different approaches and methodologies used provided converging lines of evidence that the CCP is a valid measure of criminal careers and that the CCP angle is a valid measure of criminal career severity. Finally, the findings for criminological variables, which are considered another measure of criminality / criminal career severity, were found to be inconsistent. More specifically, predicted group differences were either not found to be consistent across studies or were contrary to the predicted direction.

7.3 Application

The CCP offers a number of methodological improvements and practical advantages with regard to measuring criminality and criminal career severity, risk of future recidivism, treatment gain and outcome, comparability of groups at pre-treatment, and the effect of age on criminal careers. Also, information provided by the CCP has a number of policy and theoretical implications.

7.3.1 Measurement of criminal career and criminal career severity

The CCP provides a measure of criminal career: its onset, duration, termination, severity, and change in severity. Consistent with conceptual definitions of criminal career, (e.g., Arnold & Kay, 1999; Farrington, Lambert, & West, 1998; Smith, Smith, & Noma, 1984) and given statistical considerations, the CCP specifies that offenders who have at least two incarcerations and two prison releases have a criminal career. Criminal career, by its definition, pertains to chronic, serious offending and so does pertain theoretically to offending behavior that has been reliably observed over a certain amount

of time. Offenders who have been imprisoned only once do not have a criminal career but studying this group of offenders can help identify reasons for why some offenders do not go on to have a criminal career, which can add to knowledge regarding prevention or early termination of criminal careers.

Contemporary and historical practice of measuring criminal career severity have relied mainly on criminological variables and have shown variability in preference for which criminological variables are chosen to estimate severity. However, the pattern for criminological variables tends to be inconsistent and, consequently, the researcher, clinician, or criminal justice worker is potentially faced with the quandary of which criminological variables to choose in describing and measuring criminality.

A metric that can aggregate a number of criminological variables is available through the CCP. In essence, criminological variables are treated not as distinct entities but in a holistic manner. An index of criminality (i.e. angle of the regression line of the CCP graph) that is akin to a summary score provided by measurement scales is produced, thus facilitating direct comparisons between individuals and groups. The CCP required only minimal professional skills and very little time to execute, considerably shorter than the total time spent coding for criminological variables. Unlike criminological variables which may involve a manual count, the CCP only requires entering the offender's birth date, dates of conviction, and sentence length into an available software program. As such, the CCP can provide a practical and efficient way of measuring criminal career severity.

7.3.2 Measurement of risk of recidivism

As Shakespeare had quoted in his play *The Tempest* "What is past is prologue," so past criminality is the strongest predictor of future criminality. And the "way of the future" in recidivism research is purportedly criminal career research (Motiuk, 1993, p. 1). Rather than merely looking at whether a known criminal re-offends in the future or not, criminal career research uses a much broader concept of recidivism, which takes into account the start, duration, and termination of offending. The CCP can be useful in facilitating criminal career research and in estimating future criminality. It has been shown to address the limitations arising from treating criminological variables as independent entities. Moreover, given that it requires neither counting nor scoring but only the entry of three pieces of information into a software program and generation of a regression line to obtain an index of criminality, it has the potential to address the shortcomings that arise from the use of frequency count and rating scale methods to estimate criminal career severity. As such, the use of the CCP could potentially minimize sources of variance that might arise from using other methods of measuring criminality.

7.3.3 Measurement of treatment gain and outcome

Treatment is predicted to provide a medium for change or a *turning point* in criminal careers to decrease future offending – to retard the steady progression or worsening of criminal careers and facilitate a turning point in a positive, pro-social direction. How to measure treatment gain and outcome, however, appears to be one of the shortcomings of the literature (e.g., Serin, 1994). For example, the use of self-report may not be accurate because claims of improvement in knowledge and skills do not

necessarily generalize to a reduction in or desistance from criminal activity. Other indices (e.g., criminological variables) and statistical methodologies (e.g., survival analysis) also have limitations. Criminological variables tend to be inconsistent in showing predicted group differences. Survival analysis provides information regarding survival or failure rates only and, as such, provides a limited amount of information.

In contrast, the CCP, which consists of several criminological variables, appears consistent in showing predicted group differences and provides information regarding individual and group offending patterns after treatment (see also Nicholaichuk et al., 2000). As such, the CCP can help address the shortcomings of assessing treatment gain and outcome by providing a quantitative and cumulative measure of criminal career severity after treatment for both individuals and groups.

7.3.4 Measurement of group comparability at pre-treatment

The research on treatment effectiveness has also been criticized on other fronts. For example, Looman et al. (2000) have pointed out the lack of adequate comparison group in the majority of the research, such as Quinsey, Khanna, and Malcolm's (1998) study. One way of matching groups before treatment is to ensure that they are comparable on a number of criminological variables, such as those related to age (e.g., age at admission for treatment and age at first violent conviction), criminal behavior (e.g., number of violent convictions before treatment) and incarceration (e.g., length of sentence received for the index offense). These criminological variables can be reflected in a simple summary measure, such as the CCP. Hence, the CCP can be used as an indicator of comparability of groups.

7.3.5 Measurement of the effect of age on criminal careers

The CCP provides an alternative method of examining the impact of age on criminal careers, which is usually measured by change in frequency of offending as a function of age. The outcome for the effect of age on criminal careers can be extended to criminal career severity. Use of the CCP, specifically the cumulative method with uniform career length, to measure the effect of age on criminality has never been done before. As previously stated, the cumulative method with uniform career length has several merits, foremost which is to minimize the effect of variability in career length on the main effect of age on CCP angles.

7.3.6 Theoretical implications

The results of the present studies have supported the validity of the CCP as a measure of the construct of criminal careers, including its parameters, such as initiation, duration, and termination. A well conceptualized construct of criminal careers, which, in the case of the present studies, was through the use of the CCP, can facilitate testing of existing theories or formulation of new ones regarding criminal careers. As such, the use of the CCP to measure criminality has the potential of linking empirical relationships to a theoretical framework. Hence, "accumulating diverse independent correlations among fragmented sets of variables" could be avoided or minimized (Blumstein et al., 1986, p. 204).

7.3.7 Policy implications

The CCP allows policy decision-makers to use it as a way of quantifying seriousness and longevity of criminal careers, which may impact on service provision, supervision, and management of offenders. The overall finding that different groups of offenders have different levels of criminality, specifically high-risk offenders have a criminal career that is worse than that of medium- and low-risk offenders, provides support for existing treatment programs grounded on the risk-need principle. Moreover, the finding that Dangerous [sexual] Offenders have the worst criminal career among all the sex offender risk groups provides support for the construct of Dangerous Offenders, which tends to be invoked in the worst criminal cases.

Finally, the CCP provides support for classifying offenders as minor/serious and short-term/long-term, which can facilitate understanding of the variables that are important in career initiation, maintenance, and termination. Therefore, strategies to halt initiation, retard progression, and facilitate termination of criminal careers can be taken into account when developing and implementing treatment and discharge plans for offenders.

7.3.8 Other

The present investigation also offers other methodological strengths. Offending throughout the lifetime rather than merely portions of offending history was examined. Also, in Study 3, pre- and post-treatment career lengths were comparable, thus, minimizing sources of variance. Finally, the use of the CCP to capture changes in criminal career severity after treatment was extended from sex offenders (see Looman et

al., 2000; Nicholaichuk et al., 2000) to violent offenders and, as such, provided evidence of the tool's appropriateness for use with different offender groups.

7.4 Limitations

The CCP is sensitive to changes in sentencing options and preferences. Given that the CCP is predicated on sentence length, changes to sentencing options and preferences are certain to impact on the CCP regression line. Cohort effects may occur with changes in sentencing options and preferences. However, even when sentencing options and preferences change, those who have committed the worst crimes are still likely going to receive the longest or harshest sentence and to have the worst criminal career.

Also, two crimes having the same degree of seriousness may result in different prison sentences for a number of reasons, including judges' discretion in sentencing, and, as such, is a possible source of variance that is certain to impact on the CCP regression line. The review of the literature suggested that even when mitigating variables, plea bargains, and other negotiations, which can influence a sentence, are present, sentence length can still provide an estimate of offense severity (e.g., Bellanger, 2001; Campbell, 1993).

Another possible limitation may arise with regard to the calculation of Time In (see Section 2). In the present investigation, all Time In was calculated as two third of all sentences received to comply with the Canadian government's mandatory statutory release for federal offenders (Bill C-33; The Solicitor General of Canada, 2003) and to make CCP calculations uniform. In other cases, however, actual time served could be

used to calculate CCPs, especially if the offender was detained until his WED. If the remaining sentence length is considerable, the corresponding CCP regression line is going to be steeper compared to that which was calculated by using only two third of the sentence. The CCP angle derived from two third of the sentence may be considered an underestimation of criminal carer severity. In such cases, the options would be to calculate CCP angles using both methods and to clarify any differences arising from the use of the two methods, as well as to compare only CCP angles calculated using the same method.

7.5 Directions for Future Research

More recently, the need for a criminal career approach in describing offense pattern and characteristics has been advocated by New Zealand authors Polashek and Reynolds (2004). As part of understanding the offense chains of an offender, "a full assessment of the range of violent acts committed [and] the duration of offending should be undertaken" (p. 207). A first consideration is replication studies to further strengthen the validity of the CCP in describing offense pattern and characteristic – criminal career severity – is a strong recommendation for future research. The CCP was generally viewed and examined as a criterion rather than a predictor, but the present investigation provides some initial indications of the CCP's appropriateness for use in prediction of future offending. A second consideration is further research to investigate the CCP's contribution to the prediction of recidivism. Third, because using the CCP to measure criminal career severity before (past recidivism) and after treatment (future recidivism) is uncommon and that only now has there been considerable research focusing on its

construct validity, cut-off scores to aid in describing and comparing criminality similar to the trichotomous descriptions of either low, medium, or high has not really been suggested. However, the CCP can be used even without such descriptive labels. A fourth consideration is to use the cumulative method with uniform career length with an older sample of offenders to examine career length beyond 21 years and include the older age ranges to facilitate a better understanding of how criminal career severity changes throughout the life span. Fifth, research on the effect of variable sentencing options and preferences on the regression line of the CCP is also needed to further establish the CCP's reliability. Finally, future a methodological consideration is to use a larger sample size to improve detection of main effects.

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Appendix A

Table A1

Corresponding Slope Values of Angles (from 1° to 90°)

Angle (°)	Slope	Angle (°)	Slope	Angle (°)	Slope
1	0.0175	31	0.6009	61	1.8040
2	0.0349	32	0.6249	62	1.8807
3	0.0524	33	0.6494	63	1.9626
4	0.0699	34	0.6745	64	2.0503
5	0.0875	35	0.7002	65	2.1445
6	0.1051	36	0.7265	66	2.2460
7	0.1228	37	0.7536	67	2.3558
8	0.1405	38	0.7813	68	2.4751
9	0.1584	39	0.8098	69	2.6051
10	0.1763	40	0.8391	70	2.7475
11	0.1944	41	0.8693	71	2.9042
12	0.2126	42	0.9004	72	3.0777
13	0.2309	43	0.9325	73	3.2708
14	0.2493	44	0.9657	74	3.4874
15	0.2679	45	1.0000	75	3.7320
16	0.2867	46	1.0355	76	4.0108
17	0.3057	47	1.0724	77	4.3315
18	0.3249	48	1.1106	78	4.7046
19	0.3443	49	1.1504	79	5.1445
20	0.3640	50	1.1918	80	5.6712
21	0.3839	51	1.2349	81	6.3137
22	0.4040	52	1.2799	82	7.1153
23	0.4245	53	1.3270	83	8.1443
24	0.4452	54	1.3764	84	9.5143
25	0.4663	55	1.4281	85	11.4299
26	0.4877	56	1.4826	86	14.3004
27	0.5095	57	1.5399	87	19.0807
28	0.5317	58	1.6003	88	28.6352
29	0.5543	59	1.6643	89	57.2857
30	0.5773	60	1.7320	90	753695.9951

Appendix B

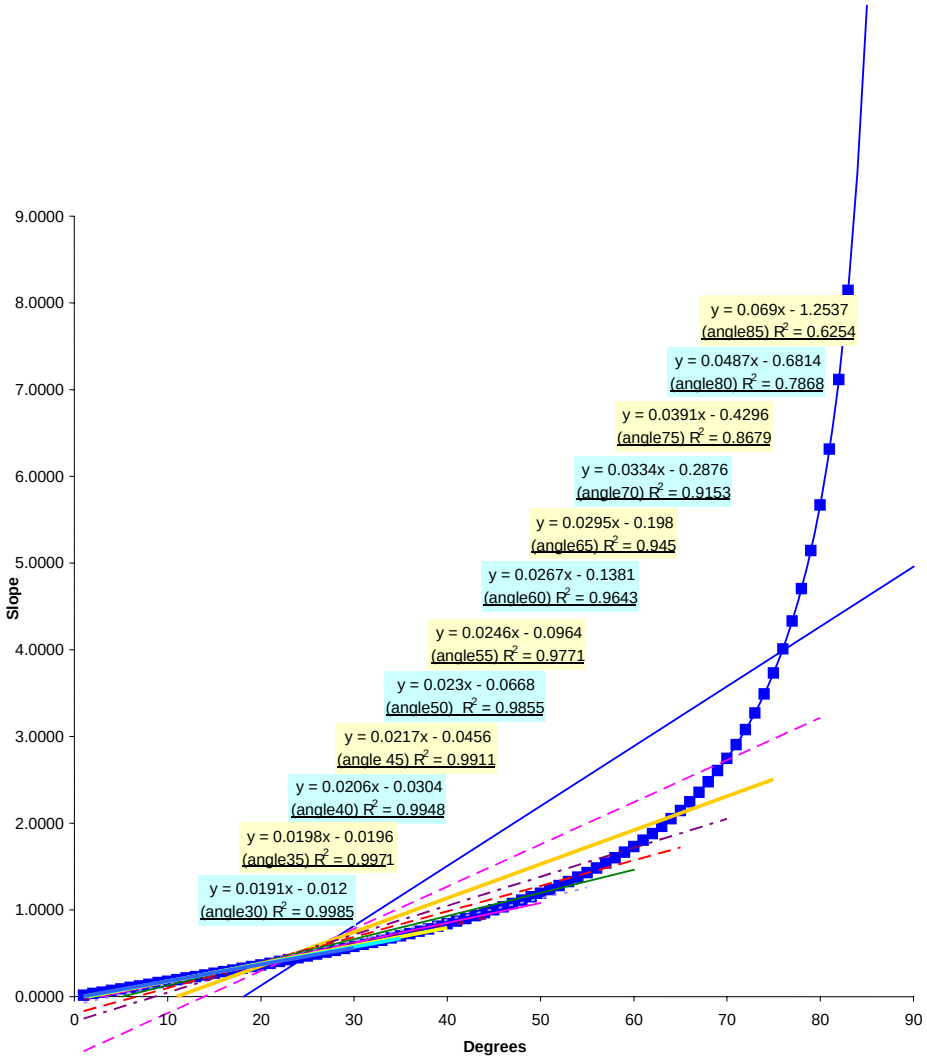

Figure A1: Slope by Angle Graph with Several Regression Lines Calculated to Estimate at which Points Slopes and Angles Start to Deviate from a Linear Relationship

Appendix C

Canadian Police Information Centre and *Offender Management System* Databases

Canadian Police Information Centre (CPIC)

The CPIC is a computerized system that has been providing tactical information on crimes, offenders, and public safety since 1972 (RCMP, 2003)[1]. It is a national database that links criminal justice and law enforcement partners across Canada and internationally. It is connected with the U.S. National Crime Information Centre and individual state databases through the Automated Canadian United States Police Information Exchange System interface. Information contained in the CPIC includes all convictions and corresponding sentences, charges, and charges that were withdrawn for whatever reason. Because only those crimes for which the offender has been caught are recorded in the CPIC, one of the CPIC's limitations is that it has the potential to underestimate the number of crimes that an offender has committed.

To be able to calculate sentence length from an offender's CPIC Criminal Record Sheet, a thorough understanding of the *Sentence Management Manual* published by CSC is highly recommended. This manual highlights the differences between concurrent and consecutive sentences imposed by judges, as well as other information needed to calculate aggregate sentences.

Offender Management System (OMS)

Similar to the CPIC, the OMS is a large computerized information system used to gather, store, and retrieve information about Canadian federal offenders (CSC, 2001)[2]. Information stored in this repository pertains to the offender's case management, treatment, and release plans. Any correctional employee, including psychologists, nurses, and other health care workers, working with the offender can share information about the offender's progress through the OMS.

Since its inception about a decade ago, it has helped the CSC and the National Parole Board (NPB) manage offenders in custody and on conditional release in the community. Also, information contained in the OMS is shared with police and other criminal justice partners.

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[1]Royal Canadian Mounted Police. (2003). CPIC renewal. Retrieved May 15, 2003, from http://www.rcmp-grc.gc.ca/cpicrencipc/aboutus/about_e.htm

[2]Correctional Service Canada. (2001). News release: Solicitor general announces $47 million to upgrade offender management system. Retrieved January 08, 2003, from http://www.csc-scc.gc.ca/text/release/01-05-08_e.shtml

Appendix D

Computer Software Needed to Construct a *Criminal Career Profile*

Generating a CCP required the use of two software programs (see Appendix E for a step-by-step instruction on how to use these programs). First, calculation of AFC, Time In, and Time Out data was enabled once a formula for each datum was specified and entered into a Microsoft Excel spreadsheet (Microsoft Corporation, 2001)[1]. What was entered into the spreadsheet was the offender's date of birth, conviction dates, and sentence length for each conviction (see Appendix F for an example). Time In and Time Out data were calculated in an additive manner, such that the last Time In datum was the total time in years that the offender has been incarcerated and the last Time Out datum was the offender's age at the time prior to serving his last sentence. Finally, Microsoft Excel was also used to calculate slopes and CCP graphs.

To generate a *step* graph, Time In and Time Out data were converted to a format (see Appendix G for an example) that Microsoft Excel can recognize. A software that can import and export data from Microsoft Excel and that can format data to enable plotting of CCP data is Corel Paradox (Corel Corporation, 1997)[2]. A script (see Appendix H) was written especially to do this data reformatting (see Appendix I for an example).

[1]Microsoft Corporation. (2001). *Microsoft excel 2002.* Mountain View (Silicon Valley), CA: Author.
[2]Corel Corporation. (1997). *Corel paradox* (version 8.00.174). Dallas, TX: Author.

Appendix E

Step-by-Step Instruction to Generate CCP Graphs

Please Note: Scripts to run programs are provided. Templates for tables in both Microsoft Excel and Corel Paradox are available.

I. Set up data in Microsoft Excel spreadsheet

1. Name the file *InOutData*
2. Label first row with the following field names and fill in Columns A to G on the spreadsheet:
   A. *ID* (ID Number)
   B. *DOB* (Date of Birth in the yyyy-mm-dd format)
   C. *Date In* (Date of Conviction in the yyyy-mm-dd format)
   D. *Sentence Length*
   E. *Date Out* (Date of Release, if information is available, in the yyyy-mm-dd format)
   F. *Time Out*
   G. *Time In*
3. Use data in CPIC and in OMS to calculate sentence length (Refer to *Sentence Management Manual;* Correctional Operations and Programs, 2001)
4. Enter formula used for INITIAL Time Out for EACH offender in Column F = (C2-B2) / 365.25
5. Enter formula used for SUBSEQUENT Time Out for EACH offender in Column F = ([C2/B2] / 365.25) – G2
6. Enter formula used for INITIAL Time In for EACH offender in Column G = D2 * 2/3
7. Enter formula used for SUBSEQUENT Time In for EACH offender in Column G = (D3 * 2/3) + G2
8. Save the file as *InOutData* and as Type: Microsoft Excel 3.0 Worksheet (*xls)
9. Except for the first conviction, delete 0 values for sentence length
10. Save the file as *InOut* and as Type: Microsoft Excel 3.0 Worksheet (*xls)

II. Import *InOut.xls* into Corel Paradox

1. Open Corel Paradox; “Startup Expert” box will appear, click “Cancel”
2. Make sure Working Directory is correct

3. Under “File” click “Import”
   “From Type” choose “Excel 3, 4, 5 (.xls)”
   “From” choose *InOut.xls*
   “From Spreadsheet” check tick box “Use first row of data as field names”
   Click “Import”; file is saved as *InOut.db*

III. Edit Data in Corel Paradox

1. Create a table in Corel Paradox and name it *Plotdata*
2. Label Columns A to C
   A. *ID* (ID Number)
   B. *Time Out*
   C. *Time In*
3. Always make sure that *Plotdata.db* is empty before initiating data transfer (Right click on *Plotdata.db* and choose "Empty")
4. Click on "Scripts" which is found on the left side of the screen

5. Right click on *DataEdit.ssl*
   Choose "Design" and make sure line "Tcin.open" contains *InOut.db* and *Plotdata.db*
   Choose "Run" to initiate data transfer
   Click "OK" after the data transfer has been completed

IV. Export *Plotdata.db* from Corel Paradox to Microsoft Excel to Generate Graphs

1. Under "File" click "Export"
   "From Type" choose "Paradox tables.db"
   "From" choose *Plotdata.db*
   "To Type" choose "Excel 3 (.xls)"
   Click "Export"; file is saved as *Plotdata.xls*

V. Generate individual CCP graphs in Microsoft Excel

1. In Microsoft Excel, open *Plotdata.xls*
2. Highlight each offender's "Time Out" and "Time In" data to generate individual graphs

3. Select "Chart Wizard" and a box will appear
   Step 1 of 4:
   - Select "XY (Scatter)" under "Chart Type"
   - Select "Scatter with data points connected by lines" under "Chart sub-type"

   Step 2 of 4:
   - Under "Data Range" select "Series in: Columns"

   Step 3 of 4:
   - Under "Titles" fill in "Title" with *ID*; type "Time Out (years)" in "Value (X) axis"; type "Time In (years)" in "Value (Y) axis"
   - Under "Gridlines" check "Major gridlines" for both X and Y axes
   - Under "Legend" uncheck "Show legend"

   Step 4 of 4:
   - Save as "New sheet" using *ID*; a CCP graph is generated

4. Once the graph is generated, make the values on the x and y axes the same
   Click on any number on the *x*-axis and a "Format Axis" box will appear
   Under "Scale", uncheck "Auto" for all boxes and instead, type in
   0 for "Minimum:"
   40 for "Maximum:"
   5 for "Major unit:"
   1 for "Minor unit:"
   Resize the plot area such that the x and y axes are the same in length

5. To save on printer ink, take out the grayscale shade on the plot area
   Right-click anywhere on the plot area
   Choose "Format Plot Area" and a box will appear
   Under "Area" choose the white shade

6. To calculate the angle, first generate the slope
   Right-click on the step-graph (i.e. connected horizontal and vertical lines)
   Choose "Add Trendline…"
   Under "Options" and under "Forecast:" type 20
   Check "Display equation on chart" and "R-squared value on chart"
   Once equation and R-squared value have been generated, convert slopes to angles using the equation Angle =ATAN(*m*)*180/3.14
   Display "CCP Angle = value" "AFC = value" and Total TI = value" on chart by adding them after the R-squared value
   Drag the Display box to the lower right-hand side of the plot area
   Align the left vertical edge of the box parallel to the last major vertical gridline
   Align the top horizontal edge of the box along the third major horizontal gridline from the *x*-axis

7. To generate other CCP graphs, copy the first graph generated and formatted
   Under "Edit" choose "Move or Copy Sheet…" and a box will appear
   Check "Create a copy"
   Once a copy has been made, right-click on the step-graph and choose "Clear"
   Under "Chart" choose "Add Data" and a box will appear
   Open "Plotdata" and highlight another offender's CCP data; click "OK"
   Under "Chart" choose "Source Data…"
   Under "Data Range" click "Series in: Rows" and then click "Series in: Columns" to generate a step-graph
   Repeat Step 6
   Save the CCP using the offender's *ID*

Appendix F

Script Written in Corel Paradox Language to Reformat Data to Generate A Step Graph
(Gu, 2002[1]; Permission is required to use this script)

```
method run(var eventInfo Event)
;; ------------------------------------------------------------
;; Method to re-organize data for CCP plot
;; ------------------------------------------------------------
Var
 Tcin, Tcout, Tcout1 Tcursor
 msgstr, FPSstr String
 Nr1,Nr2,Nu,Ne,N,N0 Longint
 OutTime1, OutTime2, InTime1, InTime2, Lastime Number
 ArrFPS DynArray[] String
 ArrIN, ArrOut, Age1 Array[100] Number
Endvar

; Initializing Variables
; ----------------------
FPSstr = "ABCDEFG"

Tcin.open("InOut.db")
TCout.open("Plotdata.db")
Nr1 = Tcin.nRecords()
Nu = 1
Ne = 0
N = 0

For I from 1 to Nr1
 If Nu < Nr1 then

        Tcin.MoveToRecord(Nu)
        FPSstr= Tcin.ID

 For J from 1 to 100
        ArrOUT[J] = 0
        ArrIN[J] = 0
 Endfor


 For J from 1 to 100
        N = Nu+J-1
        If N<=Nr1 then
                Tcin.MoveToRecord(N)
        Else
```

```
            Quitloop
        Endif

       If Tcin.ID = FPSstr then
        Ne=Ne + 1
        ArrOUT[J] = Tcin."Time Out"
        ArrIN[J] = Tcin."Time In"
       Else
        Quitloop
       Endif

Endfor


Nr2 = Tcout.nRecords()

        If Nr2=0 then
        Tcout.edit()
        Tcout.InsertRecord()
        Tcout.ID =FPSstr
        Tcout.TimeOut = ArrOut[1]
        Tcout.TimeIn = 0
        Tcout.EndEdit()
        Else

        Tcout.MoveToRecord(Nr2)
        Tcout.edit()
        Tcout.InsertAfterRecord()
        Tcout.ID =FPSstr
        Tcout.TimeOut = ArrOut[1]
        Tcout.TimeIn = 0
        Tcout.EndEdit()
        Endif

For I from 1 to Ne-1
        Tcout.edit()
        Tcout.InsertAfterRecord()
        Tcout.ID =FPSstr
        Tcout.TimeOut = ArrOut[I]
        Tcout.TimeIn = ArrIN[I]
        Tcout.InsertAfterRecord()
        Tcout.ID =FPSstr
        Tcout.TimeOut = ArrOut[I+1]
        Tcout.TimeIn = ArrIN[I]
        Tcout.EndEdit()
Endfor
```

```
        Tcout.edit()
        Tcout.InsertAfterRecord()
        Tcout.ID =FPSstr
 Tcout.TimeOut = Arrout[Ne]
 Tcout.TimeIn = ArrIN[Ne]
        Tcout.EndEdit()

        Nu = Nu + Ne
        Ne = 0


 Message("Attention! "," There are ",Nu-1," Records in data table!")
       Else
        MsgInfo("Attention!","Data transfer has completed!")
        Quitloop
       Endif
 Endfor
endMethod
```

[1]Gu, D. (2002). *DataEdit: Method to re-organize data for CCP plot.* Unpublished document; Permission from the author is required to use this document. Saskatoon, SK, Canada: Regional Psychiatric Centre Prairies.

Appendix G

Table A2

An Example of a Microsoft Excel Spreadsheet Containing CCP Data Before Reformatting Using Corel Paradox (n = 1)

ID	DOB	Date In	Sentence Length	DateOut	Time Out	Time In
000000A	**yyyy/mm/dd**	**1961/08/24**	**0.5**		**16.50**	**0.33**
000000A	yyyy/mm/dd	1961/11/22	0.5		16.74	0.67
000000A	yyyy/mm/dd	1963/04/22	0.04		17.49	0.69
000000A	yyyy/mm/dd	1963/07/25	0		17.72	0.69
000000A	yyyy/mm/dd	1963/09/13	0.25		17.86	0.86
000000A	yyyy/mm/dd	1964/03/20	3		18.21	2.86
000000A	yyyy/mm/dd	1966/12/01	0.057		18.91	2.90
000000A	yyyy/mm/dd	1968/06/06	0		20.38	2.90
000000A	yyyy/mm/dd	1969/02/28	0.08		21.11	2.95
000000A	yyyy/mm/dd	1971/02/01	0.5		22.98	3.28
000000A	yyyy/mm/dd	1972/05/19	0.08		23.95	3.34
000000A	yyyy/mm/dd	1972/11/30	5.66	1978/07/29	24.43	7.11
000000A	yyyy/mm/dd	1979/03/02	4.62	1983/10/12	26.90	10.19
000000A	yyyy/mm/dd	1985/12/03	2.25	1988/03/01	30.58	11.69
000000A	yyyy/mm/dd	1987/12/17	0.17		31.12	11.80
000000A	yyyy/mm/dd	1988/03/09	0.75		31.23	12.30
000000A	yyyy/mm/dd	1989/02/02	6.67	1995/10/01	31.64	16.75

Appendix H

Table A3

An Example of a Corel Paradox Sheet Containing CCP Data after Reformatting and Before Being Exported Back to Microsoft Excel (n = 1)

ID	Time Out	Time In
000000A	16.4955509924709	0.00
000000A	16.4955509924709	0.333333333333333
000000A	16.74	0.333333333333333
000000A	16.74	0.666666666666667
000000A	17.4880219028063	0.666666666666667
000000A	17.4880219028063	0.693333333333333
000000A	17.8556057494867	0.693333333333333
000000A	17.8556057494867	0.86
000000A	18.206392881588	0.86
000000A	18.206392881588	2.86
000000A	18.9059137577002	2.86
000000A	18.9059137577002	2.898
000000A	21.1129514031485	2.898
000000A	21.1129514031485	2.95133333333333
000000A	22.9843271731691	2.95133333333333
000000A	22.9843271731691	3.28466666666667
000000A	23.9459972621492	3.28466666666667
000000A	23.9459972621492	3.338
000000A	24.4265448323066	3.338
000000A	24.4265448323066	7.11133333333333
000000A	26.9037248459959	7.11133333333333
000000A	26.9037248459959	10.1913333333333
000000A	30.5807405886379	10.1913333333333
000000A	30.5807405886379	11.6913333333333
000000A	31.1177015742642	11.6913333333333
000000A	31.1177015742642	11.8046666666667
000000A	31.2316098562628	11.8046666666667
000000A	31.2316098562628	12.3046666666667
000000A	31.6351006160164	12.3046666666667
000000A	31.6351006160164	16.7513333333333

Appendix I

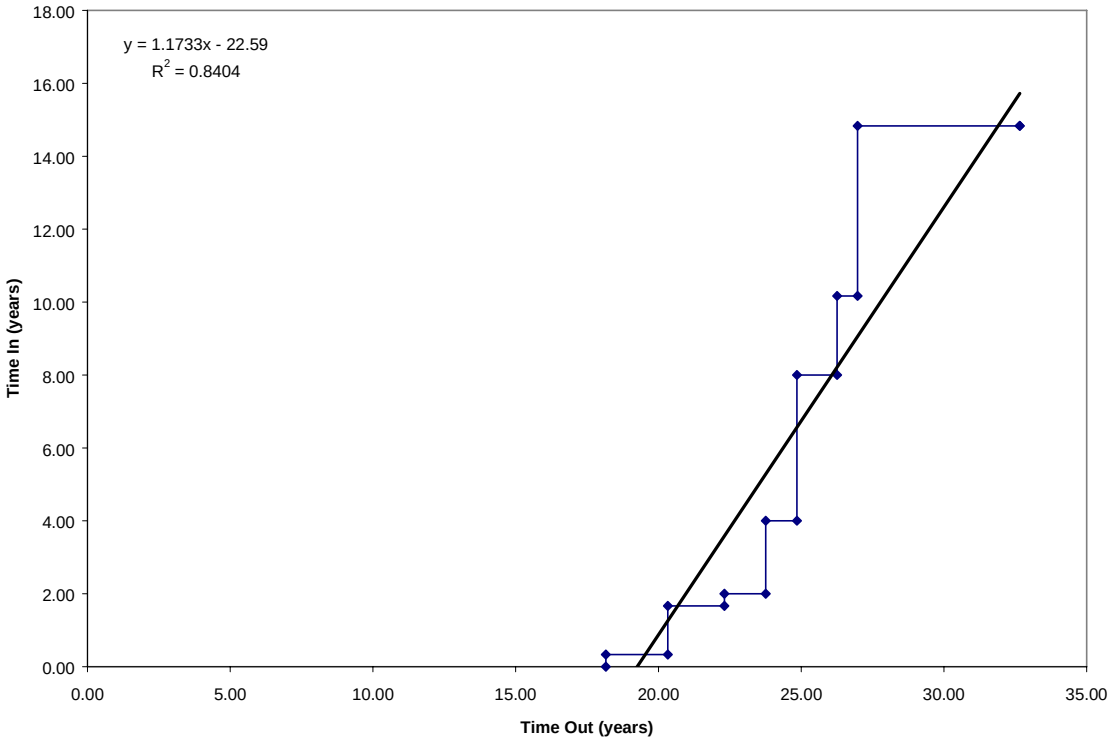
Table A4

An Example of a Microsoft Excel Spreadsheet Containing CCP Data Ready for Plotting a Step Graph and for Calculating a Slope (n = 1)

ID	TimeOut	TimeIn
000000A	16.49555099	0
000000A	16.49555099	0.333333333
000000A	16.74	0.333333333
000000A	16.74	0.666666667
000000A	17.4880219	0.666666667
000000A	17.4880219	0.693333333
000000A	17.85560575	0.693333333
000000A	17.85560575	0.86
000000A	18.20639288	0.86
000000A	18.20639288	2.86
000000A	18.90591376	2.86
000000A	18.90591376	2.898
000000A	21.1129514	2.898
000000A	21.1129514	2.951333333
000000A	22.98432717	2.951333333
000000A	22.98432717	3.284666667
000000A	23.94599726	3.284666667
000000A	23.94599726	3.338
000000A	24.42654483	3.338
000000A	24.42654483	7.111333333
000000A	26.90372485	7.111333333
000000A	26.90372485	10.19133333
000000A	30.58074059	10.19133333
000000A	30.58074059	11.69133333
000000A	31.11770157	11.69133333
000000A	31.11770157	11.80466667
000000A	31.23160986	11.80466667
000000A	31.23160986	12.30466667
000000A	31.63510062	12.30466667
000000A	31.63510062	16.75133333

Appendix J

Figure A2. The CCP as constructed originally by Wong et al. (1996)



Appendix K

Information on Sentence Management Manual

One of the mandates of the Correctional Service of Canada is to carry out the sentences imposed by the courts. Sentence management is the corporate entity charged with fulfilling that mandate[1].

The manual is intended to provide sentence management staff across the country with the necessary information and direction, in a clear and concise manner, to identify, explain, interpret and apply legal authorities impacting on the administration of a federal offender's sentence. It is to be used in conjunction with the applicable legislation and, for purposes of accuracy and clarity, the source legislation should always be consulted.

Every topic could not be covered in infinite detail. Consequently, the content herein has been identified as that which "must" be known, what has been established as the "norm" in each area. Where applicable, exceptions will be noted and every attempt will be made to keep the content up-to-date.

Types of Sentence Authorized by the *Criminal Code of Canada*

Absolute Discharge

A finding of guilt occurs but the individual is deemed not to have been convicted. The *Dictionary of Canadian Law* defines an absolute discharge as "a sentence by which the accused is discharged (released) although the charge is proven or a plea of guilty entered"[i]. Authorized by *section 730(1) CCC*[ii].

Conditional Discharge

There is a finding of guilty but probation is imposed. This requires that the accused enter into a probation order for a prescribed period of time but does not become absolute until that time has passed. The *Dictionary of Canadian Law* defines a conditional discharge as "the disposition of a criminal matter by which a person is deemed not to be convicted after serving a period of probation"[iii]. If the accused breaches the probation order, s/he may be brought back before the court. The court can revoke the discharge and formally enter a conviction on the offence to which the discharge relates and impose sentence. A person who has been granted a discharge can say they have never been convicted of a criminal offence nor do they have a criminal record. Authorized by *subsections 730(1)* and *730(4) CCC*[iv].

Suspended Sentence

When an accused is CONVICTED of an offence, the court can suspend the passing of sentence and direct that the accused be released on probation. The *Dictionary of Canadian Law* defines suspended sentence as "a judgement which puts off serving a sentence until a later date if conditions of probation are met, but if conditions are not met, the convicted party may be subjected to the original sentence"[v]. This means that if the accused is convicted of any new offences committed during the probation period or,

is convicted on breach of probation, in addition to any punishment that may be imposed for the new offence, the court may revoke the probation order and impose any sentence that could have been imposed if the passing of sentence had not been suspended. Authorized by *subsection 731(1)(a) CCC*[vi].

Probation

This is a disposition of the court authorizing a person to be at large subject to the conditions of a probation order or community service order. Probation must be attached to a conditional discharge and a suspended sentence but may also be attached to a fine or to imprisonment. Maximum length of probation is three (3) years. Authorized by *section 731 CCC*[vii].

Fines

Following conviction, a monetary penalty - a sum of money ordered to be paid as punishment for an offence - is imposed. It is normally accompanied by a term of imprisonment that shall be deemed to be imposed if the fine is not paid. Authorized by *subsection 734(1) CCC*[viii].

Victim Fine Surcharge

The court imposing sentence or discharging the offender shall order the offender to pay this monetary penalty. The penalty is the lesser of an amount not exceeding 15% of any fine imposed or $10,000 where no fine is imposed. Regulations are to be made by the Governor-in-Council and these regulations may prescribe lesser amounts. Authorized by *section 737 CCC*[ix].

Restitution

The court can order that property obtained by crime be returned to its owner, order payment for loss or damages of property or order payment of damages where bodily injury was involved. Non-payment can result in incarceration. Authorized by *sections 738* and *739 CCC*[x].

Intermittent Sentence

Conviction occurs and the court orders incarceration at specified intervals, i.e. Saturday and Sunday or Friday through Monday. The sentence of imprisonment cannot exceed 90 days for a given offence and the sentencing judge must clearly specify the period of incarceration. Probation occurs during the non-incarcerated periods. Authorized by *section 732 CCC*[xi].

Conditional Sentence

The court imposes a sentence of imprisonment of less than two years and orders that it be served in the community subject to the conditions of a conditional sentence order. Authorized by *section 742.1 CCC*[xii].

Imprisonment

The court can impose a sentence of imprisonment, which is continuous confinement for a specified period of time, impose a sentence for an indeterminate

period as is the case with a Dangerous Offender or, impose a sentence of life. The *Criminal Code of Canada* prescribes minimum and maximum limits with respect to the length of time an individual can be imprisoned upon conviction for specific offences. Various sections of the *Criminal Code of Canada* authorize specific sentences of imprisonment for specific offences.

Long Term Supervision Order

If an offender is found to be a long term offender by meeting the legislative criteria set out at section 753.1 *CCC*[xiii], the court may, in addition to imposing a sentence of a minimum of two (2) years, order that the offender be supervised in the community for a period not exceeding ten (10) years. Said supervision would commence at the end of the sentence of imprisonment. Authorized by *subsection 753.1(3) CCC*[xiv].

---

1 Section 3 CCRA, S.C. 1992, c. 20.
1 R.S.C. 1985, Chap. C-46; 1995, c. 22, s. 6.
1 Dukelow, Daphne A. and Nurse, Betsy.;The Dictionary of Canadian Law (Barrie: Thomson Professional Publishing Canada, 1991) at p. 3.
1 R.S.C. 1985, Chap. 46; 1995, c. 22, s. 6; 1997, c. 18, ss. 107, 141.
1 Supra, note 3, p. 193.
1 Supra, note 4.
1 Supra, note 3, p. 1054.
1 R.S.C. 1985, Chap. C-46; 1995, c. 22, s. 6.
1 Ibid.
1 R.S.C. 1985, Chap. C-46; 1995, c. 22, s. 6; 1999, c. 5, s. 33.
1 R.S.C. 1985, Chap. C-46; 1995, c. 22, s. 6; 1996, c. 19, s. 75; 1999, c. 5, s. 38.
1 Supra, note 8.
1 Ibid.
1 R.S.C. 1985, Chap. C-46; 1995, c. 22, s. 6; 1997, c. 18, s. 107.1.
1 R.S.C. 1985, Chap. C-46; 1997, c. 17, s. 4.
1 Ibid. See also detailed discussion on long term offenders in Chapter 23, entitled "Long Term Offenders and Long Term Supervision Orders."
1 Subsection 2(1) YOA; R.S.C 1985, c. Y-1; 1980-81-82-83, c. 110, s. 2; R.S.C. 1985, c. 24 (2nd Supp.), s. 1; 1993, c. 28, Sch. III, s. 144; 1995, c. 39, s. 177.
1 R.S.C. 1985, c. Y-1.
[1] Subsection 20(1) *YOA*; R.S.C 1985, c. Y-1; 1980-81-82-83, c. 110, s. 20; R.S.C. 1985, c. 27 (1st Supp.), s. 187; c. 24 (2nd Supp.), s. 14, c. 1 (4th Supp.), s. 38; 1992, c. 11, s. 3; 1993, c. 45, s. 15; 1995, c. 19, sc. 13; 1995, c. 22, ss. 16 and 25(b), c. 39, s. 178.

Appendix L

The Regional Psychiatric Centre

The Regional Psychiatric Centre (RPC) is located in Saskatoon, Canada. The RPC opened in 1978 and it currently offers a number of evidence-based treatment programs for offenders (e.g., Aggressive Behavior Control Treatment Program for violent offenders, Sex Offender Program, Intensive Healing Program for Women, and Psychiatric Rehabilitation Program). Treatment programs adhere to the principles of risk, need, and responsivity (Andrews et al., 1990), whereby treatment is offered to high-risk offenders, targets criminogenic needs (e.g., substance abuse and unemployment) associated with offending, and takes into account individual differences (e.g., personality, motivation, and cognitive functioning) that can influence treatment readiness and effectiveness. Treatment programs have expanded from primarily a behavioral approach in 1978 to a multi-modal approach including cognitive-behavior therapy and relapse-prevention. The RPC is currently accredited through the Canadian Council on Health Services Accreditation (RPC Prairies, 2003).

There are five units in the facility: two units for male violent offenders; two units for male sex offenders; one unit for male offenders with chronic or acute mental illness, brain injury, or both; and one unit for female offenders. The ratio of male to female offender patients is 16 to 1.

Appendix M

The *Psychopathy Checklist – Revised* (Hare, 1991, 2003)

THE PSYCHOPATHY CHECKLIST

Robert D. Hare

Name: _____

FPS #: _____

Ratings
(0,1,2)

1. Glibness/superficial charm

|_____|_____| _____

2. Grandiose sense of self worth

|_____|_____| _____

3. Need for stimulation/proneness to boredom

|_____|_____| _____

4. Pathological lying

|_____|_____| _____

5. Conning/manipulative

|_____|_____| _____

6. Lack of remorse or guilt

|_____|_____| _____

7. Shallow affect

|_____|_____| _____

8. Callous/lack of empathy

|_____|_____| _____

9. Parasitic lifestyle

|_____|_____| _____

10. Poor behavioral controls

|_____|_____| _____

11. Promiscuous sexual behavior

|_____|_____| _____

12. Early behavioral problems

|_____|_____| _____

13. Lack of realistic, long-term goals

|_____|_____| _____

14. Impulsivity

|_____|_____| _____

15. Irresponsibility

|_____|_____| _____

16. Failure to accept responsibility for own actions

|_____|_____| _____

17. Many short-term marital relationships

|_____|_____| _____

18. Juvenile delinquency

|_____|_____| _____

19. Revocation of conditional release

|_____|_____| _____

20. Criminal versatility

|_____|_____| _____

Total: _____

	Yes	No
Did you use file information for the above assessment?	[ ]	[ ]
Did you interview the patient for the above assessment?	[ ]	[ ]

Appendix N

Factor Structure of the *Psychopathy Checklist – Revised* (Hare, 1991, 2003)

Factor analytic studies have demonstrated a stable, orthogonal two-factor structure for the *Psychopathy Checklist – Revised* (PCL-R). Factor 1 (8 items) consists of affective and interpersonal traits, whereas Factor 2 (9 items) consists of criminal or antisocial behavior (Hare et al., 1990; Harpur, Hare, & Hakstian, 1989). Three items did not load on either factor.

Factor 1 items include Glibness / Superficial Charm (Item 1), Grandiose Sense of Self-Worth (Item 2), Pathological Lying (Item 4), Conning / Manipulative (Item 5), Lack of Remorse or Guilt (Item 6), Shallow Affect (Item 7), Callous / Lack of Empathy (Item 8), and Failure to Accept Responsibility for Own Actions (Item 16). Factor 2 items include Need for Stimulation / Proneness to Boredom (Item 3), Parasitic Lifestyle (Item 9), Poor Behavioral Controls (Item 10), Early Behavioral Problems (Item 12), Lack of Realistic Long Term Goals (Item 13), Impulsivity, (Item 14), Irresponsibility (Item 15), Juvenile Delinquency (Item 18), and Revocation of Conditional Release (Item 19). (Three items: Promiscuous Sexual Behavior (Item 11), Many Short-Term Marital Relationships (Item 17), and Criminal Versatility (Item 20) do not load on either factor.)

In 2001, Cooke and Michie claimed that a three-factor solution strengthen the definition of psychopathy as a personality trait, thereby effectively reducing the "conceptual confusion" arising as to whether psychopathy is a trait or simply a behavior (p. 185). However, using a much larger data set than what was used for the original PCL-R, Hare (2003) found an equally stable four-factor model. Factor 1 was essentially partitioned into Interpersonal and Affective facets, whereas Factor 2 into Lifestyle and Antisocial facets.

Appendix O

The *Violence Risk Scale* (Wong & Gordon, 2006)

Score Sheet

Static Factors

				I or N[†]		
S1	Current Age	0	1	2	3	_____
S2	Age at First Violent Conviction	0	1	2	3	_____
S3	Number of Juvenile Convictions	0	1	2	3	_____
S4	Violence throughout Lifespan	0	1	2	3	_____
S5	Prior Release Failures/Escapes	0	1	2	3	_____
S6	Stability of Family Upbringing	0	1	2	3	_____

Total Static Factor Score before Treatment: _____

Total Static Factor Score after Treatment: _____
(only if there are changes to S1 or S5)

[†]*If it is necessary to omit rating a Static or Dynamic Factor, the rater should indicate whether the omission is because there is insufficient information (I) or because the item is not applicable (N).*

2

DYNAMIC FACTORS AND TOTAL SCORES

		RATINGS				
		Pre-Tx *(a)*	**Stage of Change** †	**# of Stages changed x .5** *(b)*	**Post-Tx** *(a-b)*††	**I or N**
D1	Violent Lifestyle	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D2	Criminal Personality	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D3	Criminal Attitudes	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D4	Work Ethic	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D5	Criminal Peers	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D6	Interpersonal Aggression	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D7	Emotional Control	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D8	Violence During Incarceration	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D9	Weapon Use	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D10	Insight into Violence	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D11	Mental Illness	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D12	Substance Abuse	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D13	Stability of Relationships	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D14	Community Support	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D15	Released to High Risk Situations	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D16	Violence Cycle	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D17	Impulsivity	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D18	Cognitive Distortion	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D19	Compliance with Supervision	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D20	Security Level of Release Inst.	0 1 2 3	0 1 2 3	1.5 1 .5 0	____	____

Indicate if Clinical Override was used: **Yes □ No □**	Pre-Tx:	**← Total Dynamic Factor → Score**	Post-Tx:
		← Total Static Factor → Score From Previous Page	
		← Total Static + Total → Dynamic Factor Score	

†For treatment purposes, specify whether the client is in Precontemplation or Contemplation stage by circling (O) or marking (X) the 'P' **or** 'C' stage for pre- and post-treatment, respectively.
††If there is a deterioration during treatment, the *'b'* score is added to the *'a'* score for the corresponding Dynamic Factor**.**

Appendix P

Dangerous Offenders

The number of offenders designated as Dangerous Offenders has grown considerably since the enactment of the DO legislation in 1977. There were only three DO in Canada in 1978, whereas 60 already by 1985 (Jakimiec, Porporino, Addario, & Webster, 1986). As of May 1999, there were 267 DO, of which 235 were incarcerated, 29 were supervised, and 3 were suspended (Smiley et al., 1999). As of September 2004, there were 331 DO in Canada – 314 in federal prison, 16 on community supervision, and 1 deported (Correctional Service Canada, 2005). Dangerous Offenders made up 2.7% of Canada's federal offender population in 2004.

An important caveat to note is that the DO status is not conferred automatically. The decision to petition for a DO status is at the discretion of the Crown Attorney in each Province or Territory (Solicitor General Canada, 2001). Whether an offender is subjected to the DO proceedings depends on whether *prosecutorial discretion* is exercised at the time of sentencing. How strict the tests for Dangerous Offenders are applied may vary from prosecutor to prosecutor, and from jurisdiction to jurisdiction. For instance, between 1978 and 1985, the Canadian provinces of British Columbia, Alberta, and Ontario invoked the DO status more often than did the other remaining provinces/territories (Jakiemic et al, 1986). Out of the 60 DO in 1985, 16 were designated as such in British Columbia, 9 in Alberta, and 29 in Ontario. By 1999, 85 were housed in the Pacific region, 46 in the Prairies, 108 in the Ontario region, 13 in Quebec, and 15 in the Atlantic region of the Correctional Service Canada (Smiley et al,, 1999).

Alexander & Wong (2000), during their attempt to better understand the risk of recidivism of DO, have noted that the earlier DO designation process seldom included systematic analyses of criminal behavior or scores on actuarial measures of risk of recidivism. It is highly probable that there are non-Dangerous Offenders who fit the DO criteria but were not subjected to the DO proceedings. Recent research has shown that DO score comparably on actuarial measures of risk than non-DO (e.g., Witte, Di Placido, & Wong, 2001).

Appendix Q

The Violence Risk Scale: Sexual Offender Version (Wong et al., 2002)

Static Factors[1]

Risk Factor	Codes	Score
Prior Sex Offenses	Charges Convictions	
	None None	0
	1-2 1	1
	3-5 2-3	2
	6 + 4+	3
Prior Sentencing Dates (excluding index)	3 or less	0
	4 or more	1
Any Convictions for Non-Contact Sex Offenses	No	0
	Yes	1
Index Non-Sexual Violence	No	0
	Yes	1
Prior Non-Sexual Violence	No	0
	Yes	1
Any Unrelated Victims	No	0
	Yes	1
Any Stranger Victims	No	0
	Yes	1
Any Male Victims	No	0
	Yes	1
Young	Aged 25 or older	0
	Aged 18 – 24	1
Single	No	0
	Yes	1
Total Score	Add up scores from individual risk factors	

[1]Hanson, R. K., & Thornton, D. (1999). *Static-99: Improving actuarial risk assessments for sex offenders.* User Report 99-02. Ottawa: Department of the Solicitor General of Canada.

Dynamic Risk Factors

Dynamic Risk Factors (A+B)		Pre	Stage	Post	I or N	
D1	Sexually Deviant Lifestyle	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D2	Sexual Compulsivity	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D3	Offense Planning	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D4	Criminal Personality	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D5	Cognitive Distortions	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D6	Interpersonal Aggression	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D7	Emotional Control	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D8	Insight	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D9	Substance Abuse	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D10	Community Support	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D11	Released to High Risk Situations	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D12	Sexual Offending Cycle	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D13	Impulsivity	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D14	Compliance with Community Supervision	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D15	Treatment Compliance	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___
D16	Deviant Sexual Preference	0 1 2 3	M A P PC	-1.5 -1 -.5 0	I N	___